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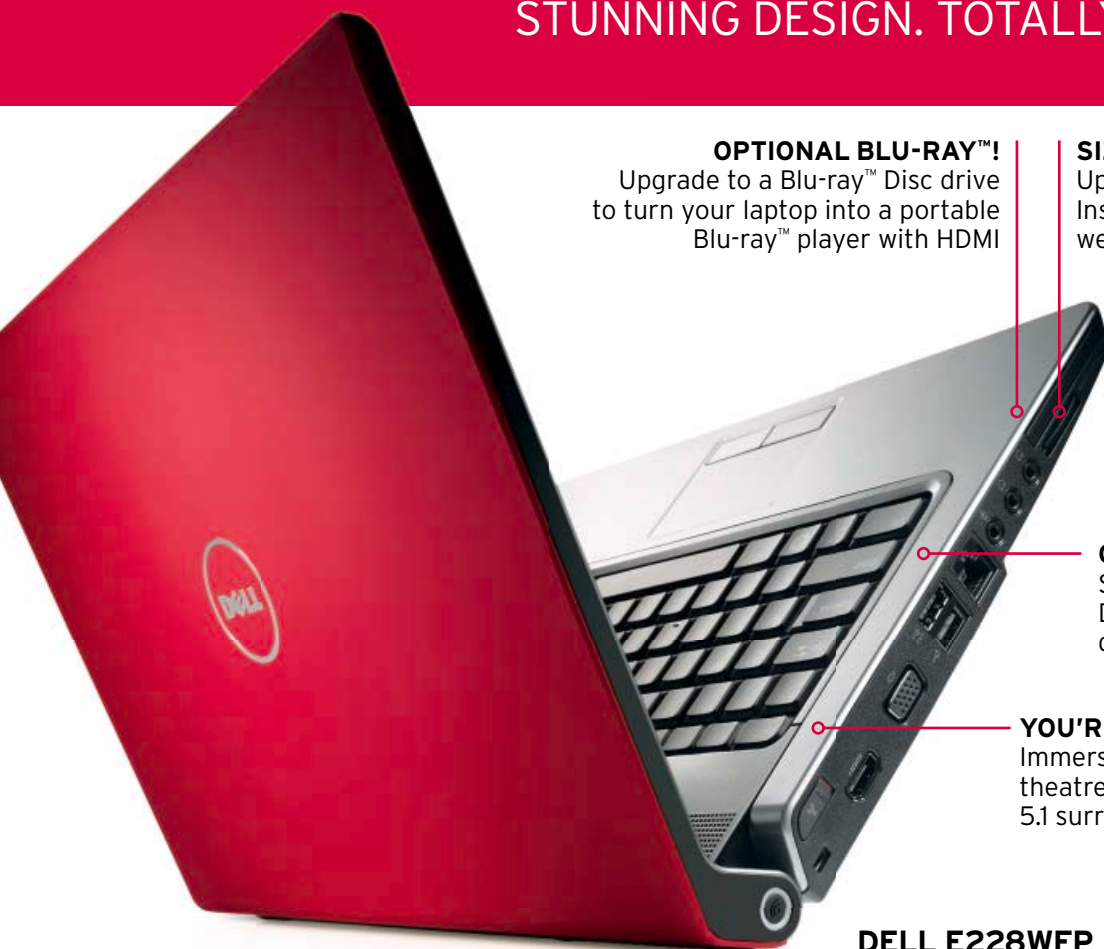
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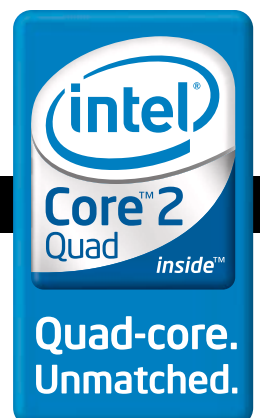
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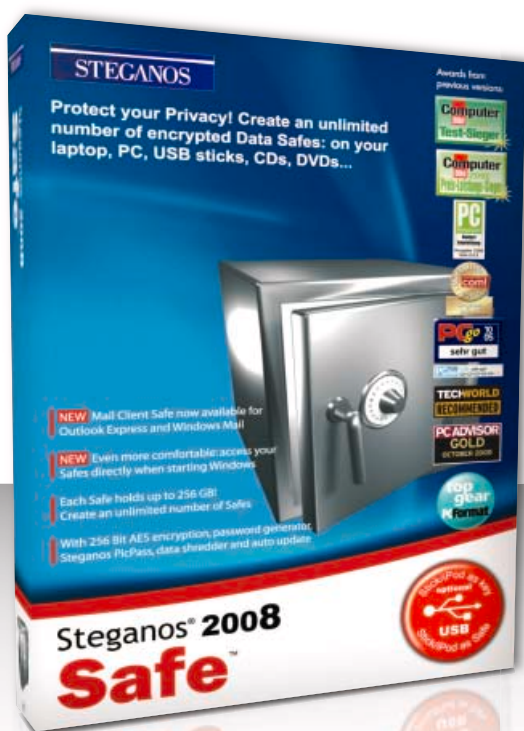
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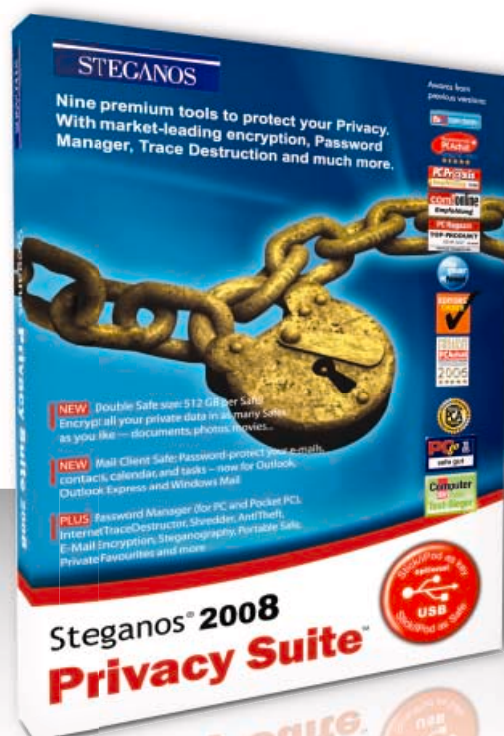
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Editorial



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PC users head off to Boot Camp

Windows users can now enter the stylish world of Macs and still use their PC-based programs, writes Kelvyn Taylor

I'll admit right now that I don't get on with Mac computers. Or to be more precise, I don't get on with the OSX operating system. Our production department uses iMacs, and every month I usually end up having to spend some time fighting the bouncy icons, awful keyboards, ridiculous mice and odd menu systems that are part and parcel of the standard Mac experience. The machines aren't any more or less reliable than our office Windows PCs, although at least they usually crash a little more gracefully.

Mine is a dislike born of inexperience – I've never had to use OSX for extended periods of time, so I've never got used to it. I'm perfectly aware of its technical merits, but it's not for me. However, I've always loved the design and styling of Mac hardware – even the first jelly-coloured iMacs were a breath of fresh air in a dull beige world. Going

Apple's clever Boot Camp program changed all that. Realising that Windows users didn't want to have to make an all-or-nothing decision, Apple made it possible to multiboot between OSX and Windows. Of course, it doesn't really shout about this feature as it wants people to embrace the whole Apple platform including the OS. But for savvy PC users looking to put a bit of style into their computing environment, it's a godsend.

And that's why we've dedicated this month's cover to Macs. We did review Boot Camp when it first appeared, but since then it's become a bit of a hidden gem. With the launch of the stunning Macbook Air and the redesigned iMac range, we've had a number of queries about the practicalities of using a Mac as your main Windows PC, so we decided to get the entire range into our labs and see how well they run Windows. You can find our conclusions in the feature starting on page 74.

Recently car giant Chrysler announced that it was planning to offer a wireless internet option in all its cars in the US from 2009. Bluetooth is already commonplace in new cars, so I suppose it was only a matter of time. But as you can read on page 88, we discovered that for a dedicated band of PCW readers, this is old hat. They've spent the past few years working out how to integrate a complete Windows PC, taking over the in-car entertainment, navigation and even diagnostic functions. It may not be your cup of tea, but it's fascinating to see just what can be done with a bit of ingenuity and a lot of hard work.

Finally, I'd like to remind you that the British Technology Awards, run in association with PCW, have now entered the final stage of voting. If you'd like to have the chance to vote for your favourite technology products and win some great prizes, turn to page 24 for more details. **PCW**

'The latest Apple computers have built-in features that PC users have to bolt on'

back further, the original Mac that PCW reviewed in March 1984 had a novel all-in-one design with a certain oddball charm, despite its beigeness.

Few people would deny that the latest Apple desktops and notebooks look stunning. They also tend to have all sorts of built-in features that PC users have to bolt on if they want them. How many Windows desktops can you name with built-in webcam, Bluetooth and 11n Wifi?

Prior to Apple's 2006 decision to move to Intel processors in its computers, Windows users who were tempted by Mac hardware had to make a painful decision whether to abandon Windows and their existing software collection entirely, or double their costs by running separate systems.

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Keep up to date with the news, reviews and competitions in our weekly newsletters. To subscribe go to www.pcw.co.uk

UK still in running 60 years on

Computing has passed two big milestones in the past month, with the 60th birthday of Britain's first stored-program computer and the final departure of Bill Gates from Microsoft.

The 1948 Baby computer, built as a technology demonstration at Manchester University, marked the start of the mainframe age. Thirty years later geeks such as Bill Gates, and Apple's Steve Wozniak and Steve Jobs, were helping to take mainframe power to the desktop.

Another 30 years on, the rivalry between Apple and Microsoft is as strong and healthy as ever, though Microsoft has a far bigger global market share, and desktop power is migrating to untethered handhelds.

Apple has gained most kudos from this transition, thanks to its revolutionary iPhone (see opposite) and iPod; but Microsoft got there earlier with its mini Tablet PCs, which are arguably closer to what future mobiles will be like.

UK computing, which began so promisingly with the wartime Colossus, Baby, and Cambridge's Edsac (<http://tinyurl.com/66qags>), seemed for a long time to have been swamped by the US industry.

But the mobile trend has focused attention on ARM, which grew from Cambridge computing expertise. Machines using its low-drain cores outnumber those using x86 chips; ARM and Intel are now going to head to head in new classes of mobile (see p12 & 13).

Other news this month recalled an even earlier UK player in the mobile arena. Psion was way ahead



Above: Bill Gates with partner Paul Allen in 1981, surrounded by micros, shortly after winning the contract for the IBM PC operating system. See <http://tinyurl.com/o398y>

Right: The late Tom Kilburn, one of the builders of the Baby, with the rebuilt machine at Manchester in 1998. See <http://tinyurl.com/2pvh4s>



of the game when it launched its pioneering Organiser in 1984, and it went on to produce the much-loved Psion Series 3 and Series 5 before flogging its software to joint-venture Symbian in 1998.

Now Symbian has become the focus of a new mobile group formed to counter Apple and the looming threat of open-source platforms such as Limo and Google's Android. Nokia has said it will buy Symbian shares owned by Sony Ericsson, Panasonic and Samsung and make its software available free.

It has formed the Symbian Foundation with Sony Ericsson, Motorola and NTT Docomo to combine Symbian mobile software,

the UIQ interface and Docomo's MOAP(S) applications platform.

Also joining the Foundation, with the aim of creating a single open mobile software platform, are AT&T, LG, Samsung, ST Microelectronics, Texas Instruments and Vodafone.

Rarely mentioned among today's mobile luminaries is Palm, whose pen-driven Pilot PDA did most to drive Psion to spin-off Symbian and bury its head in corporate niche markets. This may have made business sense for Psion, but many believed it bottled out of what could have been fascinating design war. Ten years later it still looks that way.

Clive Akass

Gold rush as web domain names go freeform

New rules approved by internet regulator Ican allow virtually complete freedom of choice for top-level domain names.

They mean that from next year brands and even personal names could replace the likes of .com and .uk. Domain names in

exotic scripts, such as Arabic, will also be permissible.

At the moment, top-level domains are limited to countries, commerce (.com), and institutions such as .org.

Some small companies have cashed in on this by charging for

the use of names such as .tv (the domain of the Tuvalu island in Polynesia).

The rule change could start a gold rush as people register promising new names for later sale. It could also lead to a rash of disputes over business names.

3G iPhone rattles the market



Left to right: 3G iPhone, the camera-like C905, and the Wii-like F305

Apple's new 3G iPhone will be available though O2 from 11 July for 'free' on the most expensive monthly contracts. The 8GB version will cost £299.99 for pay-as-you-go customers, and the 16GB will cost £359.99. O2 has signed a deal with BT Openzone and The Cloud to give users free Wifi access in 9,000 hotspots.

The new model was dismissed as "no market changer" by research group Info-tech, which said the

addition of 3G, GPS and third-party applications was simply a catch-up with rivals such as Blackberry vendor, Rim. However, senior researcher Mark Tauschek admitted the upgrade would allow Apple to increase its market share.

Rivals were putting on a brave face. HTC has just launched a business phone called the Touch Pro with a 3D touch interface and a slide-out keyboard, as well as GPS and 3G support. Samsung's answer,

launched just hours before the iPhone, is a 3G model called the Omnia i900 with a haptic (touch) interface and a 5-megapixel camera.

Sony-Ericsson went 3-megapixels further with its new 8.1-megapixel C905 Cybershot, which looks more like a camera than a phone. And for a younger consumer, it is offering the bizarre F305, which includes Wii-style motion-sensing gaming, providing control with the flick of the wrist or the swing of an arm.

Cell power

Two new Toshiba laptops use a version of the Cell processor, as used on the Playstation 3, for media acceleration. The 15.4in Qosmio F50 and 18.4in Qosmio G50 are both designed as high-entertainment PCs and offer up to 640GB of storage. Their Cells have four specialist processor elements, compared with the PS3's eight.

Smart plug

Last month we featured the £17 Intelliplug from One Click (www.oneclickpower.com), which shuts down power to your PC and peripherals when you exit Windows. Powerdown offers a similar product that lets you can schedule switch-offs. It will cost you £29.99, provided you can be persuaded to pay an extra £10 per year 'licence renewal' fee.

→ www.pcpowerdown.com

Win a car

The Driver and Vehicle Licensing Agency (DVLA) is giving away three eco-friendly cars a month until 31 May in a free prize draw for motorists who renew their vehicle tax online or by phone.

→ www.pcw.co.uk/2218397

Microsoft extends XP's life by three years

The support deadline for Windows XP has been extended by three years to 2014, Microsoft has announced. The company also pledged that its next-generation Windows 7 operating system will be available by 2010. However, system builders will be able to supply Windows XP PCs until 31 January next year.

The extended deadline move looks like an admission that some businesses will not bother upgrading to Windows Vista. The emergence of low-cost mobiles has also created a demand for an operating system that is leaner and cheaper than Vista.

Bill Veghte, senior vice-president of the Microsoft Windows Business

Group, said in a letter to users:

"Our customers have made it clear that they want broader support for devices and applications."

He added: "You've also let us know you don't want to face the kinds of incompatibility challenges with the next version of Windows you might have experienced early with Windows Vista."

PCW writer wins two top BT awards

PCW writer Jon Thompson has won two prestigious BT Security Journalism Awards.

His feature *Avoiding the Cybersnoops* published in the July 2007 issue of PCW (www.pcw.co.uk/2190502), was named Best Privacy Feature of the Year and Best Overall Information Security Feature of the Year, against stiff competition from some of the UK's top IT journalists.

The feature investigated how sensitive personal information can be mined from seemingly innocuous traces left during internet interactions.



Jon Thompson celebrates his victory

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Floating Ram packs more bits

Processors could include three to four times more memory in a given area using a form of memory called floating body cell (FBC), which requires only one transistor per location as opposed to the six in current caches.

The idea is not new. Toshiba announced three years ago that it had developed 128MB D-Ram modules using FBC, and AMD has licensed, but apparently not yet used, FBC technology developed by Innovative Silicon.

Standard memory cells require a capacitor to store charge. Floating body cells trap charge in a thin layer of buried oxide.

Mike Mayberry, Intel director of components research, told the VLSI conference in Hawaii that the company could introduce the technology at the 16nm scale, which from its processor roadmap would mean around 2011.

Mayberry said FBC cells were a little slower than six-transistor S-Ram cells. "A single transistor memory would be so much better if we could make it work."

3-bit memory

A new, more compact form of Flash will cut memory prices by 30 per cent, according to chipmaker Hynix. It has developed 32GB chips that cram three bits in the space formerly occupied by two by simplifying and shrinking circuits.

→ www.pcw.co.uk/2218247

Intel unveils new frugal chips

Intel announced the availability of two new 45nm low-drain Atom processors, designed for fixed and mobile web access devices.

They are to be used inside netbooks and nettops, which, translated from Intel marketing speak, means small, light-duty portable and desktop PCs.

The N270 has a thermal design power (TDP) of 2.5W at 1.6GHz, with drain averaging 0.6W, while the 230, which supports Hyperthreading, has a TDP of 4W. The chips complement the Z5xx series announced in April.

Anand Chandrasekhar, general manager of the mobility group, claimed in a Computex keynote speech that the 1.1GHz Z510 has three times better integer performance than a 500MHz ARM Cortex-A8 core and, at 1.6GHz



Intel executive Eric Mentzer shows off a G45 Express-based motherboard

Z530, is more than twice as fast as the ARM chip at 1GHz.

However, designs more powerful than the Cortex A8 are available, including the Cortex A9, which can

have up to four cores; realistic comparisons can only be made with whole systems because much depends on the performance and drain of peripheral functionality.

On ARM implementations, most of this is packed into frugal systems-on-chip; the Atom requires relatively thirsty peripheral chips.

ARM said its designs are more power efficient and executives pointed in particular to the standby power, which is crucial in mobile devices that may be sent to sleep for instant wake-up, rather than being powered down.

Intel also announced a new 4-series chipset comprising the G45, G43, P45 and P43, with faster graphics and lower drain.

AMD Puma boosts mobile graphics

The Atom launch at Computex eclipsed that of a new AMD mobile platform, codenamed Puma, which is built around the dual-core Turion X2 Ultra processor and the new mobile AMD 7-series chipset.

The chip integrates ATI Radeon HD 3200 graphics with DirectX 10 support. It also supports ATI's Mobility Radeon HD 3000 discrete video cards, including the new 3800 series and older 3400 and 3600.

Integrated and discrete graphics

can be yoked to boost performance in the manner of Crossfire cards.

Puma had what was effectively a second launch at HP's Berlin event (see page 14), where eight of the new notebooks had Turion x2 options, not all available in Europe.

AMD, having lost the CPU performance edge to Intel, has shifted focus from the processor to the platform. Chris Winiewicz, notebook business development manager, said: "Innovating is about

delivering what users need. It is not simply about performance."

He claimed the AMD Turion X2 Ultra ZM-80 processor and 780G chipset with integrated 3200 graphics had three times the 3D performance of the Intel Core 2 Duo T8100 processor with x3100 graphics media acceleration.

He added that AMD's use of the Atheros AR9280 Wifi module gave a 62 per cent greater throughput than Intel's 4965AGN module.

Nehalem chip can tune itself each tick of the clock

Chips using the next-generation Nehalem architecture will ship on schedule later this year, Intel confirmed at Computex.

They will be introduced at 45nm but will shrink next year to 32nm following Intel's tick-tock timetable of a design change one year and a scaledown the next.

More details of Nehalem were revealed at the VLSI chip technology conference in Hawaii. The first products will have four

cores, each controlling its own voltage and clock rate to suit current conditions.

This reconfiguration can be done as fast as every cycle and will further erode the usefulness of clock ratings as a performance metric. Intel said it is not dropping them at the request of partners.

Nehalem will also have the ability to test how fast a bus can operate, eliminating expensive exterior testing and aiding performance

optimisation. These measures are part of a trend to allow hardware to tune and even heal itself.

Nehalem also offers Intel versions of the on-chip memory controller and Hypertransport bus that for some years gave AMD processors a performance edge.

Quick Path Interconnect (QPI) offers point-to-point links for a device's processors, memory and communications (I/O) hub, avoiding the bottleneck of the front-side bus.

Nehalem QPI channels will support up to 6.4 gigatransfers a second (GT/sec), delivering a total of up to 25Gbytes/sec bandwidth.

Rajesh Kumar, director of Intel circuit and low-power technologies, claimed this is three times faster than "our competition" – company executives never refer to AMD by name.

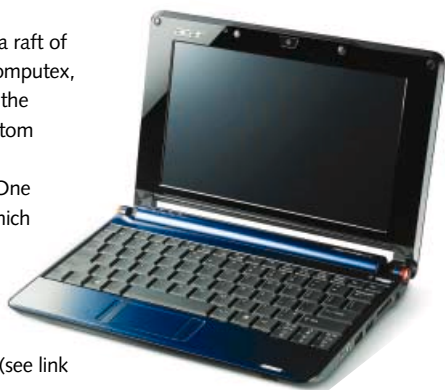
Nehalem memory bandwidth will be 32Gbytes/sec using 1,333MHz triple-channel DDR3.

Atom powers UMPC explosion

The Asus Eee prompted a raft of 'me too' products at Computex, given extra impetus by the launch of Intel's low-drain Atom processor (see opposite).

Acer unveiled its Aspire One ultra-mobile PC (UMPC), which looks better value than the entry-level Eee PC. For the same £200 price, you get a bigger 8.9in screen and more Flash memory at 8GB (see link at top of page for a review).

Acer UK managing director David Drummond echoed Intel's line that devices such as the Aspire One are not laptops, but a new genre



Acer's Aspire One has an 8.9in screen

MSI showed the 1kg Atom-powered Wind with its 10in screen. Gigabyte displayed two ultraportables – the M912, with a 8.9in swivel touchscreen, and the 7in M724, targeted at schools. The M912 can be used in tablet mode.

Asus showed three second-generation Eee PCs, including the 9in 901 (reviewed on page 35), the 10in 1000 and 1000H. The 1000 uses Linux and a 40GB solid-state disk, while the 1000H has an 80GB hard disk and comes with a choice of Linux or Windows XP.

called netbooks. Whether the market will take such a clear-cut view is another matter, and some fear the machines will harm notebook sales.

ARM and Nvidia rival Intel in new minis

Chip designer ARM and graphics specialist Nvidia unveiled products capable of competing with Intel's Atom in the emerging class of ultra-mobile computers.

ARM announced a multi-core graphics processing unit (GPU), the Mali-400MP, which will allow mobile devices to process 1080p high-definition TV. Typically, it would be used in tandem with an ARM central-processor core.

The Mali-400MP has a single vertex processor capable of 30 million triangles per second, which is "way beyond the requirements even of current games consoles",



Nvidia's Tegra is a system-on-a-chip

according to Chris Porthouse, senior product manager for media hardware at ARM. It can have between one and four fragment processors, depending on the requirements of the application (more details at www.pcw.co.uk/2218016).

Nvidia announced a system-on-a-chip called Tegra that wraps its own graphics round a single ARM11 MP core. A Tegra demonstration screened 720p HD video side by side with an Atom-powered Asus Eee PC running standard definition, drawing around a tenth of the power (1.3W as opposed to 12W) and using a motherboard a tenth of the size. Nvidia is said to have a build capable of 1080p HD.

Texas Instruments earlier this year demonstrated its OMAP 3430 system-on-a-chip, also using an Arm core capable of delivering 720p video.

In brief

Modular SSD

Taiwanese manufacturer Pretec showed what it claims is the world's highest capacity 2.5in SATA solid-state disk, using four Compact Flash slots capable of taking the company's own 48GB CF cards, giving a maximum capacity of 192GB.

The advantage, according to Pretec, is that you can choose lower capacities and scale up as needed. It also showed the 48GB S660, which it claims is the highest capacity USB drive available; it includes a fingerprint sensor for security. → www.pretec.com

Cool power supply

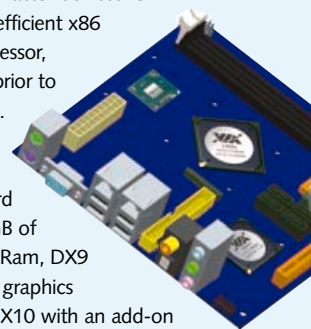
CoolerMaster's UCP 900W is said to be the first mainstream power supply to qualify for the 80-plus silver logo, which means it is at least 85 per cent efficient at all loads up to the maximum. → www.coolermaster.com

Two-way card

Asus said the Eee PC would support a new micard multimedia card compatible with MMC and SD slots, but with upper and lower contacts so that it will work whichever way it is inserted. The micard standard was developed by a Taiwanese consortium led by ITRI and announced last year.

Mini board

Via announced specifications for a Mini-ITX 2.0 board designed for next-generation small form factor devices for its power-efficient x86 Nano processor, launched prior to Computex. Features of the 7x7in board include 2GB of DDR2 SD-Ram, DX9 integrated graphics support, DX10 with an add-on card, VGA and HDMI out, and a PCI Express 16-channel slot. → www.via.com.tw



Grown-up handhelds threaten US power

The Atom and new ARM-based devices show the PC industry scaling down and the smartphone industry scaling up to produce powerful true portables.

Gossip has it that Apple may move to the Atom or Power architecture on the successors to the iPod and iPhone, but current models use ARM cores, which dominate handheld designs. The Apple handhelds are content delivery devices, almost useless for input. The big question is whether

products based on ARM cores, or rivals such as Mips, can compete with x86 on grown-up mobiles. The ramifications are many.

Intel, and by extension the US, dominates the x86 chip business; rival systems-on-a-chip bring other companies and countries, such as Samsung and Korea, into the game. Cheap mobiles are squeezing Microsoft on software pricing, and they are less tolerant of bloatware. This opens a huge opportunity for Linux and the

open-source environment, as device vendors can bundle a slim operating system and Microsoft-compatible office suite virtually free. The Tegra supports Windows CE and Windows Mobile. The OMAP 3430 supports Linux, Windows Mobile and Symbian.

Computex tends to be PC-centric, so this year's new ultramobiles were x86 designs. Rival architectures will make their mark, if at all, at consumer electronics shows such as CES.



Dreamworks' dream screen

The most impressive act at HP's big Berlin event came from film company Dreamworks, which showed off three-dimensional versions of scenes from its new feature *Kung-Fu Panda*, although it will be realised as pure 2D.

You have to don Polaroid specs to get the 3D effect, which is good enough to have you trying to dodge virtual missiles.

HP has been heavily involved in developing the technology and a spin-off has been a new LCD screen that reproduces colours as well as a CRT. Standard LCDs lack consistency because the lighting is not uniform across the screen, but HP's Dreamcolor LP2480zx uses clusters of red, green and blue LEDs to ensure uniform illumination.

The display will cost \$3,500 (£1,780). HP says it is as good as specialist models costing between \$15,000 and \$20,000.

iPaq one in the i for Apple

The iHype over iPods and iPhones leaves the impression that iApple started the iFashion for putting a small i in front of everything. In fact, Compaq started it back in April 2000 with the launch of its iPaq handheld.

HP, which now owns Compaq, has announced the latest version, the iPaq 914 Series Business Messenger. It could hardly be more different from the iPhone, with its miniature Qwerty keyboard, 3-megapixel camera and Microsoft's Windows Mobile 6.1 OS. But, like the iPhone, it supports 3G and Wifi. Watch out for a review in

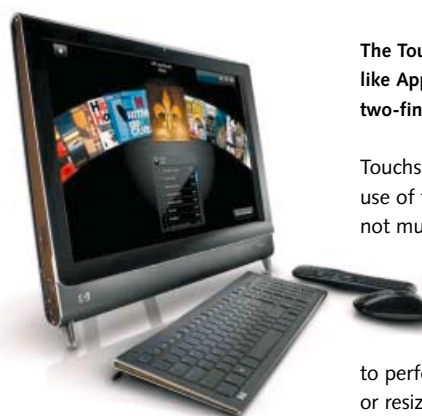


HP brand aims for Apple chic

HP flew 600 journalists to Berlin last month for one of the slickest launch events in its history, when it unveiled scores of new products.

Executives spent an entire day telling us about the new notebook range without once mentioning specifications, evidently recognising that people are taking performance for granted. The emphasis was more on style, and both the products and the launch presentation showed that HP had been looking very closely at Apple.

Todd Bradley, HP vice-president for Europe, Asia and Africa, was trumpeted into the Berlin Congress Centre by a jazz band. HP executives and products were ushered on stage like new acts by Chero Jobatey, who was described as Germany's 'Mr Breakfast TV'. HP's marketing head honcho Satjiv



Chahil declared: "We are resetting the HP brand."

Centrepiece of the new launch was a combined PC and monitor called the Touchsmart All-in-one, with a touch interface remarkably like that of Apple's iTouch. You get the same ability to flick through documents and photos, but the

The Touchsmart has an interface like Apple's iTouch – but with no two-finger gestures

Touchsmart does not include the use of two-finger gestures. This is not much of a loss, because (to this user at least) these can be quite hard work and on a large screen there are easier ways to perform actions such as rotate or resize.

Moreover, the Touchsmart can be tilted to different angles, but it is not designed to be used flat, a position in which intricate gestures are easier. This means it can hardly be used for handwritten input, though this is supported. The US price is around \$1,400 (roughly £700) or \$1,600 with a TV tuner; UK prices start at £1,099 inc Vat.

Voodoo turns new gaming PC inside up

Extreme games specialist Voodoo, which HP bought two years ago, showed off a complete rethink of the classic PC layout for its latest model, called the Omen, which was shown at the Berlin event (see above).

The motherboard has been turned through a right-angle, leaving the ports arrayed underneath a detachable lid. This leaves the back clear, except for a gap at the top where the cables emerge.

Six drive bays are aligned at right angles to their normal positions, and are accessible through neat little side

panels. On the front is an LCD that can be used as a secondary display or status monitor.

The demonstration model was running an SLI-yoked pair of next-generation Nvidia graphics cards, details of which were not revealed. The machine can take up to 8GB of overclockable 1,600MHz Corsair PC-14400 DDR3 SD-Ram. There's a choice of 3.2GHz or 3GHz Intel QX9770 quad-core processors.

HP describes the Omen PC as a luxury machine. So luxurious, in fact, that you won't be able to buy one

for a while unless you already own a Voodoo, because first products will not be available to new users.

If you do buy one, it will set you back between £3,300 and £10,000, depending on spec.

Voodoo also showed a 13.3in WXGA screen notebook called the Envy. The box is made of tough carbon fibre and is just 0.7in thick compared with the 0.76in of the Macbook Air, which Apple claims is the world's thinnest notebook and has a similar spec.

● See The Mac revisited, page 19.

Elite notebook boasts military toughness

Star of HP's new business notebook line-up is the 2.1kg Elitebook 6930p, which is said to comply with military standards of ruggedness.

It comes with a choice of AMD and Intel processors, and has a 14in screen. Options include a built-in webcam that doubles as a business card reader. HP claimed a battery life of up to 15 hours using an

Magical chrome controls for the new dv range

optional ultra-capacity pack. Prices start at £967.

HP's new HP dv4, dv5 and dv7 notebooks have been given a sleek, liquid-metallic finish, with so-called 'magical chrome' controls that appear at the touch of a finger. Prices for the notebooks start at £749 inc Vat.



VigorPlug



The 200Mb/s VigorPlug is a device which carries data around your home or office using your mains wiring. It's an ideal and secure alternative to wireless or Ethernet cables.



Vigor 2820 Series

The Ultimate ADSL Firewall/Router



- ADSL/ADSL2+ and Broadband Router
- Dual-WAN ports for ADSL, cable modem or both
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Vigor110

ADSL Ethernet Modem

- True ADSL Ethernet Modem
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Broadband Security Router

- Robust Firewall with Ethernet WAN
- CSM (Content Security Management)
- Web content filter
- Bandwidth management
- VoIP capability with 2 phone ports
- QoS for high VoIP quality
- Up to 32 VPN tunnels
- 3G Cellular Data Option



Vigor2930 Series

Ethernet Security Router

- Dual Ethernet WAN
- Robust Firewall
- CSM (Content Security Management)
- Web content filter (with SurfControl)
- High Performance WAN & VPN
- VoIP capability with 2 phone ports
- QoS for high VoIP quality
- Up to 32 VPN tunnels
- ISDN backup & connectivity



Vigor2950 Series

Dual WAN Security Firewall

- High Performance (90Mb/s)
- Dual Ethernet WAN Ports for load balancing or WAN backup
- 5-port Gigabit LAN with VLAN
- Robust firewall & QoS
- CSM (Content Security Management)
- Web content filter (with SurfControl)
- 200 High Performance VPN tunnels
- SSL VPN



Vigor3300V

Enterprise Multiservice Security Router

- 4-port WAN and 4-port Ethernet LAN
- Robust firewall
- EMS management
- Web content filter (with SurfControl)
- Up to 8 FXO or 8 FXS VoIP ports
- QoS for high VoIP Quality
- Configurable DMZ port
- 200 VPN tunnels

VigorPro 5510 UTM

- High Performance Firewall
- Dual WAN Interfaces
- Anti-Virus & Anti-Trojan
- Real-Time Anti-Spam
- 5-Port Gigabit Ethernet LAN
- Gigabit Ethernet Port
- Vast array of security features

See web site for full specification



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www.draytek.co.uk



Superior Memory for Value-Conscious Users



4GB DDR2-667 Fully Buffered DIMM

Transcend's 4GB DDR2-667 Fully Buffered DIMM server memory module provides an exceptionally cost-effective solution for high-end servers of the next generation for the followings features:

- Advanced Memory Buffer (AMB) controller that increases system efficiency
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- Capacity up to 64GB

Transcend's 4GB DDR-667 FB-DIMM is 100% compatible with Intel's S5000 chipset, IBM's x3400/3500, HP's ProLiant DL380 G5/ML370 G5 and Dell's PowerEdge 2900/2950 servers.

1GB JetRam® DDR2-800 DIMM



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* Please see Warranty Card for details and limitations

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www.transcendusa.com

Wireless battle over 60GHz

A new technological battle has begun, caused by plans to use 60GHz radio for multi-gigabit home networking links.

Radio at these frequencies is rapidly attenuated by oxygen and requires line-of-sight links, which means it can only be used within rooms. However, short range means more people can use the bands and transmission power can be lowered, easing health fears. The beams are more focused too, increasing both privacy and power efficiency.

These benefits run counter to the hype of vendors who push Wifi as a substitute for a wired network and pretend that range doubling and hogging channels will not increase congestion. Yet Wifi was designed as an edge technology, complementing, rather than replacing, a fixed network.

US authorities have opened the spectrum from 57GHz to 64GHz for unlicensed use and Britain's Ofcom is considering something similar. Interest in the spectrum has grown because of doubts about how soon ultrawideband (UWB) links, which are facing technological and regulatory problems, will get up to speed.

Two IEEE committees are taking different approaches to 60GHz. One, 802.15.3c, is expected to go with a UWB approach. It is also considering technology proposed by the WirelessHD Alliance, supported by Sony, Panasonic, Toshiba, NEC and LG Electronics, according to a report by analysts Rethink Research (<http://tinyurl.com/5t73t3>).

The second committee is the Very High Throughput (VHT) study group of the 802.11

committee, which wants to adapt Wifi for 60GHz.

There is no reason several technologies should not exploit 60GHz, just as they do with the 2.4GHz and 5GHz used by Wifi.

But Caroline Gabriel, research director at Rethink, said: "It may be hard for the IEEE to house two 60GHz standards under its current rules, but as the spectrum becomes more important, there will probably be a need for several standards to move to 60GHz."

If the IEEE can't cope with that, there is a danger its authority will be weakened by industry groups defecting to other standards bodies, as the Wimedia ultrawideband alliance did in 2005 when it looked to the European ECMA organisation for approval.

In brief

ISP speed pledge

Thirty-two internet service providers have signed a code of practice promising greater clarity on what broadband speeds subscribers can expect, regulator Ofcom has announced.

However, there was an immediate call from the Internet Service Providers' Association (ISPA) for the voluntary code to be extended to wireless operators offering mobile broadband.

The ISPA said it supported the code of practice and had helped to draft it. However, it warned: "Every single broadband connection's speed will be different. Even neighbouring houses supplied by the same provider can receive different speeds."

→ www.pcw.co.uk/2218354

100,000 Fonnors

BT's share-your-link Fon Wifi service has signed up more than 100,000 users since its launch last October, according to the company.

Subscribers allow their fixed broadband connection to be available to fellow Fon users via a secure channel on their wireless router, thus creating a network of free links. The Fon scheme will be extended to businesses later this year.

→ www.pcw.co.uk/2218159

£49 USB modem

Vodafone has cut the price of its broadband-on-the-move USB modems by £50 to £49 for users on 30-day contracts.

Contracts currently start at £15 a month for 3GB of usage for those signing up for 12 to 24 months, going up to £25 a month for 5GB on a 12- to 24-month deal, while 30-day contract users pay £20 a month for 3GB of usage.

In May, 3 cut the price of its £99.99 ZTE and Huawei E220 modem dongles to £49.99 on pay-as-you-go deals.

→ www.pcw.co.uk/2218498

LTE and Wimax should wed, says Intel

Competing 4G wide-area technologies Wimax and LTE could become unified under one standard, an Intel executive said at the Computex show in Taiwan.

Sean Maloney, head of sales and marketing, was echoing what Intel officials said privately at the Mobile World Congress in February, when it became clear that LTE was emerging as the 4G technology of choice for

mobile operators. He said: "They ought to be harmonised." But a Wimax chipset from Intel, due to launch this year, won't support LTE.

Intel, the main force behind Wimax, has formed a joint venture with Britain's Pipex, called Freedom 4, to roll out services in UK cities.

LTE and Wimax both use OFDM modulation and are similar enough to require the same hardware, with

software coping with the differences. Intel is introducing processors later this year for Wimax that could be used for LTE, although Maloney said that wasn't in the company's plans.

Canadian telecoms Giant Nortel said last month it would be backing LTE rather than Wimax. It has teamed up with Tel Aviv-based Alvision to develop LTE products for release in 2010.

Bluetooth chip bundles sat nav and FM

CSR has unveiled its seventh-generation Bluetooth chip, which includes support for enhanced sat nav (eGPS) and an FM transceiver that pushes the output of a portable media player to a car



radio, avoiding the need for a wired link.

The Bluecore 7 chip supports Bluetooth v2.1 with extended data rate (EDR), giving a maximum throughput of 3Mbps/sec. It also includes what was previously

A sat-nav module runs on a 1.66GHz Core Duo-powered notebook, with a mounting for lorry cabs from rugged-computer specialist JLT (www.jltmobile.co.uk). CSR's new chip could bring GPS to all handhelds

called Bluetooth Ultra Low Power but has been renamed Bluetooth low-energy. This is designed for body-area network tasks, such as exercise monitoring or passing caller numbers to a watch.

John Halksworth, head of product management, said the chip required only a handful of passive peripheral components.

● Microsoft has developed an embedded version of Windows called Navready for ARM-powered sat-nav devices.

→ www.pcw.co.uk/2218283

Voice ID to cut bank fraud

The main British high-street banks plan to introduce voice recognition within the next year as a way of deterring card fraudsters, according to speech recognition software specialist Nuance.

Ian Turner, general manager for Nuance's operations in northern Europe, said: "By the end of next year, about 20 million people in the UK will be registered with some kind of system."

He said voice recognition can be 97 per cent accurate, but it is always used with some other form of identification, such as a password.

He added that even good mimics cannot fool the system.

Nuance, best known for its Dragon Naturally Speaking voice-input software, provides one of the major voice-biometric systems on the market.

→ www.pcw.co.uk/2218258

Job fears reduce remote working

Workers in the UK, who are becoming more fearful of losing their jobs in the worsening economic climate, are shunning remote working so they can look busy in front of their bosses, according to a recent survey by Microsoft.

Ironically, their bosses are more likely to work at home, and are three times more likely to do so than other staff, according to the survey by Microsoft's Windows Mobile division.

Only one in 10 of those questioned said they had the freedom to work away from the office, while 13 per cent said they were discouraged from doing so.

New Studios

Pinnacle has launched version 12 of its £39.99 Pinnacle Studio video-editing software, with more than 25 new features including a montage module for animation. The higher-end Studio Plus and HD-enabled Studio Ultimate cost £69.99 and £89.99 respectively.

→ www.pinnaclesys.com

Firefox 3 seeks download record

As we went to press, Mozilla was waiting to hear whether it had established a world record for downloads with the latest version of its Firefox browser.

The unofficial tally after 24 hours was 8.2 million, and it might have been higher if initial demand had not overwhelmed Mozilla's servers.

They were soon back in action and demand for Firefox 3 had peaked at 14,000 downloads a minute. Chief executive John Lilly said: "It has been a very busy 24 hours for Mozilla folks around the world. Like everything that is Mozilla, this involved people far beyond Mountain View and far



Within hours, a critical vulnerability had marred the release of Firefox 3

beyond the borders of any one company or group." The record must be confirmed by observers from the *Guinness Book of Records*.

US users led the download chart with 2.6 million copies, followed by

Germany (738,000) and Japan (406,000). The UK accounted for 313,000 downloads, while France logged 306,000 and Spain 310,000.

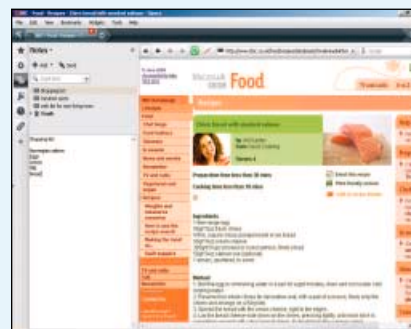
Firefox 3 includes a much-improved bookmarks feature and the ability to resume interrupted downloads from the break point. It also allows you to sort bookmarks by topic and add keywords and tags. A new button for bookmarking sites is similar to one available on Internet Explorer 7.

However, security firm Tipping Point found a 'critical vulnerability' in the software within hours of its release. Mozilla was reported to be working on a fix.

Opera 9.5 speeds up

Version 9.5 of the Opera browser was released last month for Windows, Mac and Linux systems.

A new Link feature keeps your bookmarks, speed dial and notes synchronised from different devices, while a Quick Find feature lets you find a recently visited web page on a keyword search. According to Opera, defences against malware and phishing have been strengthened, and there have been speed improvements to the email client, RSS feeds and the browser. Opera is free from www.opera.com.



Opera 9.5 includes speed improvements

Fired man cleared in malware porn case

A man has been cleared of possessing indecent images of children after a US court found his PC had been hijacked by malware for use as a porn cache. The images were found after phone

company Verizon warned his employer that his phone bill was higher than it should have been.

Michael Fiola, a 53-year-old investigator with the US Department of Industrial Accidents

(DIA), was fired and criminal charges were filed. Computer forensics analyst Tami Loehrs said US Government investigators had agreed with her finding that Fiola was not responsible for the indecent downloads.

She described the treatment of Fiola as horrific. Loehrs told *The Boston Globe*: "As soon as you mention child pornography, everybody's senses go out the window. There is no evidence to support the claim that Michael Fiola was responsible for any of the pornographic activity."

Fiola plans to sue the DIA. His attorney, Timothy Bradl, said: "This could happen to anybody who has a work laptop. Fiola is a 'hunt-and-peck' kind of computer guy. He can barely get on the internet."

Express Hotmail link saved

Microsoft has backtracked on a decision to prevent people from accessing their Hotmail accounts through Outlook Express.

In a letter to users, Microsoft said they should instead download the Windows Live email client, which "has the familiarity of Outlook Express and much more". The letter added that Outlook Express uses a legacy protocol called DAV, which was unsuited to addressing the 5GB of email storage now provided with Hotmail. It gave a deadline of 30 June.

But following protests from users, Microsoft postponed the move without specifying a new deadline. Further details can be found at: <http://tinyurl.com/4dcr3l>.

Air apparent

What is the best form factor for the emerging class of true portables? Clive Akass looks at the options, focusing on his personal experience of the Macbook Air and the Eee PC

Apple's Macbook Air is no longer the world's thinnest notebook, following the launch of the new Voodoo Envoy from HP (see page 14).

The Macbook Air measures 0.76in at its thickest compared with the Envoy's 0.7in but, as the Mac tapers to 0.16, it seems thinner. It's also lighter at 1.37kg, compared with the Voodoo Envoy's 1.54kg weight.

Both machines have been compared with Lenovo's Thinkpad X300, which is between 0.73in and 0.9in thick, and weighs much the same at between 1.32kg and 1.41kg but, unlike its two rivals, it contains a DVD drive.

A more telling comparison is with the chunkier, small-screened ultra-mobiles that reduce width rather than thickness to gain portability. But which approach is preferable?



The Eee PC is cheap enough to buy just for use as a video phone

How the slimlines compare

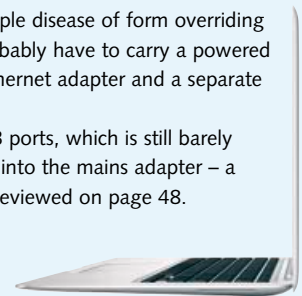
The HP Voodoo Envoy and Macbook Air both have a 13.3in 1,280x800 LED-backlit screen, a 1.8GHz Core 2 Duo processor and Intel GMA X3100 graphics.

But Apple made big compromises to get the Air's size down. It has just one USB port, no wired Ethernet port, no DVD drive, and the battery is not removable. The lack of a DVD drive is defensible but other compromises seem to have been made for looks, not portability: the old Apple disease of form overriding function. This means mobile working users will probably have to carry a powered USB hub with adapter (£20 to £30), a £19 USB-Ethernet adapter and a separate DVD drive.



The Envoy has a removable battery and two USB ports, which is still barely adequate. An Ethernet port has been incorporated into the mains adapter – a solution that's also used in the Iliad ebook reader, reviewed on page 48.

The Macbook Air looks slimmer because it tapers, but in fact the Envoy is the thinner of the two



I have a personal interest in this, having won a Macbook Air shortly after buying one of the first Asus Eee PC 700s, so I have been using both in earnest.

Either can easily be slipped into a bag and carried without weighing you down. The Macbook Air, despite a pointlessly simplified keyboard (no Del key, for instance), is easier to type on but not remarkably so.

It scores on looks, screen size and performance, and it can be used as your sole computer, whereas the Eee PC 700 is definitely a second machine.

The Eee PC 700 scores in having three USB ports, an SD card reader, wired as well as wireless Ethernet and a solid-state drive (albeit only 4GB) at entry level. It is lighter at 1kg and, of course, is a quarter of the price.

The 7in screen is adequate for writing articles and emails, as well as for using the web. High resolutions can actually be worse at this scale, because features become too small.

Both machines function well as video phones, using their built-in cameras. In fact, the Eee is cheap enough to be bought for that purpose alone.

I take the Air with me on extended work trips because I can use all my software on it. But the Eee PC 700 is better for carrying around town because it is less tempting for muggers and is a more affordable loss.

I've become quite fond of the Air, despite its many irritations. But my hunch is that the Eee is closer to what will become the dominant mobile size and price. Future mobiles will be both thin and narrow, and they will probably be pocketable – even if that means folding them in two or having bigger pockets.

Mac OS v Vista: walled garden or dodgy freedom?

Time was when I used both a Mac and a PC intensively, side by side. The Macbook Air has got me using Apple software regularly again for the first time in years, this time alternating with Windows Vista using Boot Camp (see page 79).

I had expected to be impressed by the revamped Mac OS, but found myself hankering for the old Mac interface – for much the same reason some Vista users hanker for XP. The trickery of carousels, docks and 3D views may help newbies, but to me they get in the way.

The Air in Mac mode is not immune to crashes, but it does not, like Vista, forever give me security prompts. Macs are not malware targets to anything like the same extent as PCs, so Vista has to be more vigilant, but it is harder on the user nevertheless.

That Macs were always easier to use than PCs is something of a myth. Because the PC software industry is bigger and more competitive, PC applications were often the first to get usability tweaks (such as a 'recent documents' listing).

The difference between the Apple and Microsoft approaches is nicely illustrated by Steinberg's Cubase 4 software, which can be used on either machine, so long as you plug in a USB security dongle.

It happened that I wanted to read the Cubase manual when I didn't have the dongle with me. On a PC this is no problem: you go to the Cubase program folder and find the relevant PDF file. But the Air interface won't allow you to look at the Cubase files and a search won't turn up the PDF.

There is probably a way round this, but it's not obvious, so it's not a user-friendly operating system. However, this walled garden approach, insulating you from the system, works for a lot of people.

More objectionable is the fact that Apple uses every trick in the book to extend the wall to ecommerce: the interface and bundled software are used shamelessly as an Apple e-shop window and sales counter. If Bill Gates tried that, he would be shot at dawn.

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LETTERS

→ Send your letters to The Editor, PCW, Incisive Media, 32-34 Broadwick Street, London, W1A 2HG Send your email to letters@pcw.co.uk

★ LETTER OF THE MONTH

Eee on trial

We recently purchased some Asus Eee PCs to trial with students and teachers in our school.

I have just returned from a 10-day study visit to Yad Vashem Holocaust Museum in Jerusalem and used the Eee for the duration of that visit.

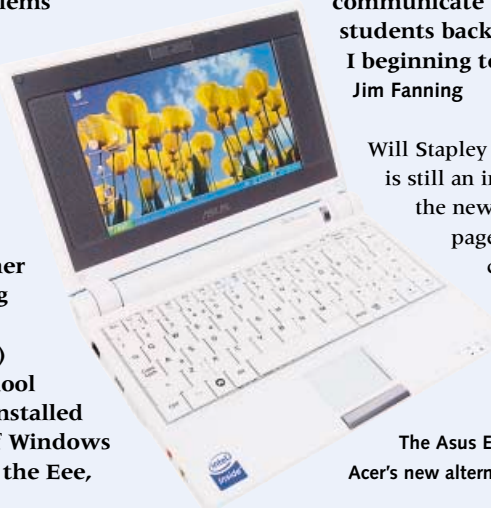
In terms of good points, price is first and foremost. Dropping, damaging or having a £200 PC stolen is not quite the same as one that costs nearer £1,000 – and at this price, it's almost feasible to equip every pupil in school with one. Furthermore, while everyone else struggled on the flight with their hefty laptops, the Eee was a real dream machine in terms of weight and size; I used it in an unobtrusive way in and around Jerusalem.

I have no problems with the Eee's speed – it boots up and operates quickly – and the wireless connection was faultless; connecting to other devices (including a printer and interactive board) was easy. Our school technicians had installed licensed copies of Windows XP and Office on the Eee,

and all worked perfectly. The not-so-good-points are the keyboard – it's OK for short bursts, but a bit of a nightmare for any serious text-based work – and the screen, which is just a bit too small for any long-term serious web surfing.

Apart from these minor niggles, the Eee is a great little PC. I suppose it's a case of balancing up the compromises: cost, size and performance against screen and keyboard issues. For me, it is size that wins the day. You simply had to watch other colleagues lugging their notebooks and laptops about for 10 days to appreciate how versatile the Eee is.

I just wish I'd had a chance to try the built-in camera with messenger to communicate with staff and students back in school – oops, am I beginning to sound geeky now?
Jim Fanning



Will Stapley replies: While the Eee is still an impressive piece of kit, the new Acer Aspire One (see page 34) looks like a serious challenger. It also has a slightly bigger keyboard, which is something you might appreciate.

The Asus Eee 701 won many fans, but Acer's new alternative is a serious challenger

UMPC DECISIONS

Thanks for the excellent reviews of the ultra-mobile PCs in your August issue. It was nice to see your expert analysis, generally supporting my recent purchase of an Asus Eee PC 701.

When I looked at purchasing one of these mini-marvels some weeks ago, I saw that most can now provide virtually all the functionality I'm looking for as a mobile worker. So for me the test was (and still is) all about cost

versus weight and size. I saw that here in the UK I could pick up my Eee (700 series) for £249, and it weighed in at just over 1kg (with the battery, adapter and my mini-mobile hard disk). I also spotted that if I wanted anything smaller and lighter, I would have had to look at something such as the HTC Shift X9500 (retailing at about £900) or the OQO model E2, which costs a massive £1,500.

Although I looked at this matter before the Eee PC 900

(your Editor's Choice) became widely available, I would still have picked the 700 model. It's a little lighter, a little smaller and a lot cheaper – for pretty much the same functionality.

Now I wait with eager anticipation to see how Microsoft will react to this booming UMPC market. It has already extended the life of Windows XP to temporarily plug this gap. I don't think it will be long now before it comes up with an operating

system designed specifically for these UMPCs – with a small footprint, requiring fewer resources, but able to truly meet all the needs of mobile workers.

Mick Harrison

SMALL WONDERS

I have an Asus Eee PC running Windows XP Pro and Office 2003, and it works really well. It has now replaced my corporate laptop (a Toshiba Tecra M9) and is so much easier to carry.

In an idle moment, I tried plugging the USB cable from a Toshiba Dynadock into the Eee and it loaded device drivers and then kicked into life, so I now have network, printing, monitor, wireless keyboard and wireless mouse all on my office desk using the Eee PC – and I only have to plug in the power and one USB.

Jon Bernardes

WHS TO TV

I have always eagerly awaited the next issue of *PCW* and the past few months have been no exception. I've been playing around with Windows Home Server (WHS) for a while now and had even gone as far as ordering the 120-day evaluation. It does everything it says on the box in terms of backups, network storage, remote access and more. Then your article about how to build a £99 PC (*PCW* July 2008) spurred me into doing just that – but putting Windows Home Server on it instead.

The area that I think *PCW* has missed out on is how to get the music and video files from the WHS and onto a TV or hi-fi. It doesn't really matter whether you are using WHS or a simple Nas (network-attached storage) device – they still need some form of device to get the information into a useable form. I buy Roku Soundbridge media players for the music and they work well with both the WHS and internet radio, however for the video files, it appears to be more difficult.

The cheapest solution appears to be D-Link's DSM players, but



these start at £150. Other solutions include Microsoft's Xbox, but I don't really want to be installing games consoles in rooms just to watch video.

How about *PCW* continuing the series and writing an article on how to get the files off the WHS and onto a TV or hi-fi? After all, you've given us the options for storing them on the home network.

Mark Laird

Will Stapley replies: You will need some form of media streaming hardware to access your media files on a TV or hi-fi. There will be a group test of the latest media streaming devices next month, so be sure to keep an eye out for it. It's also worth mentioning that, due to the noise generated by its fans, I would never recommend the Xbox as a media streaming device.

EMAIL BACKUP

I want to thank you for Gordon Laing's article in the August issue of *PCW* about backing up; at last, a real-world approach to this that recognises the shortcomings of the traditional backup packages that give you a single massive backup file with no visibility of what is inside or whether everything has properly been backed up.

Gordon hinted that there might be a follow-up article. If there was one thing missing from the last one, it is the issue of the other data that is not in 'data files'. After a crash, it would be nice to be able to retrieve saved

Media streaming devices let you get content off a WHS and onto your TV

email (especially the address book), and as I use Turnpike as my email program, it is a bit more complicated.

Congratulations, though, on a sensible article.

Nigel Ogilvie

OS CHOICES

Like many others, I was waiting for Windows Vista Service Pack 1 before replacing my PC. Then the reviews of SP1 led me to the conclusion that I might as well try to wait for SP2, or even skip Vista and wait for Windows version 7. But my PC started showing signs of impending hardware failure and I needed to buy a new one.

My supplier offered Vista as standard or, for £50 extra, I could have chosen XP instead. Well done for recognising and responding to consumer demand to keep offering XP as an option, but why the premium? My guess is that one way or another, Microsoft will ensure that manufacturers find it in their best interests to sell Vista in preference to XP. Leave it to the manufacturers as to how they achieve that – one option being to charge a premium for the 'additional cost of a non-standard build'.

However, as a consumer, I conclude that if people are prepared to pay a premium for XP, then it must be better than the cheaper Vista.

So, Microsoft, why not encourage vendors to sell machines with both XP and Vista pre-installed – dual boot, but defaulting to Vista? As a consumer, I'm then not faced with the dilemma of which operating system to go for.

Being a Yorkshireman, I went for the cheaper option. I've not yet hit any major snags with Vista, but neither have I found any real advantages over XP.

Doubtless there are technical/security improvements, but nothing that visibly improves my normal day-to-day productivity. Performance seems broadly comparable with my XP machine, but Vista is running on a faster processor with more Ram. Maybe I should have forked out that extra £50 and benefited from a real performance hike for my money?

Rob Hindle

VISTA SUCCESS

Eventually, after a year or more of reading about the tales of woe of installing Vista, I decided to make the move. The company I work for is upgrading tens of thousands of desktop clients to Vista and I've been involved in the managing, testing and remediation of Windows 2000-to-Vista issues, but I had not taken the plunge myself.

The target machine was my HP Pavillion ZD8123 laptop, equipped with a 3GHz P4 and 2GB of Ram. I thought it had to go wrong; nothing would be able to work and all the indications were that I would be on XP for the remainder of the PC's life.

How wrong I was. Everything works, it's faster and is a much better overall user experience.

After 30 years in IT, I thought I had seen it all, so I was pleasantly surprised. It has been running now for four weeks, with five family user accounts, and is used for at least four hours every day – and not a thing has gone wrong. And no, I

don't work for Microsoft – for years I was a badge-wearing VMS and Unix nerd.

Bill Belfield

MINI WONDER

I've just read the August issue of *PCW* and having been interested in getting a mini-laptop for several months, I have been keeping on top of developments, both in your magazine and online. I am extremely impressed



The Mininote is HP's alternative to the Asus Eee PC



with the speed at which this market is developing, and it's great to see people realising that a computer is about more than just raw power these days.

I am writing mainly because I think you've actually missed the best mini-laptop currently available. This is the HP Mininote 2133, which was originally exclusive to RM in the UK, but is now widely available.

I ordered the Linux model a few weeks ago, installed Windows XP when I received it – by using a USB memory stick, the installation was very simple – and I could not be happier. For £350, I have got a 8.9in screen with 1,280x768 resolution, a 1.2GHz processor, 1GB of Ram, a 120GB hard drive, a proper keyboard and good connectivity, as well as great build quality.

This machine, which is not a toy, has completely replaced my previous machine – a Dell Inspiron. I hadn't intended this to happen at all, as I purchased the HP Mininote 2133 just for travelling. However, my Dell Inspiron has now found itself permanently connected to my TV as a media centre.

Thanks to the high-resolution screen and quality keyboard of the HP Mininote 2133, I have developed Access databases, run complex spreadsheets, watched videos – including 4onDemand and BBC iPlayer – delivered presentations, listened to music and played games.

I'm now never far from this machine and I'm even looking to

add another use for it soon by purchasing a GPS receiver to make use of the fantastic screen as my sat-nav system.

Chris Baker

Will Stapley replies: You'll find a review of the HP Mininote in this issue on page 36. Despite being an impressive effort by HP, we prefer the Acer Aspire One and Asus Eee PC 901 (both also reviewed in this issue on pages 34 and 35, respectively).

A STEP TOO FAR?

In the August 2008 issue of *PCW* your description of East-Tec Eraser 2007 said: "Protect against data snoops by safely and securely erasing your important files". I can see deleting my important files would protect them from anyone, but it would make it difficult for me to use the data.

Stewart Cockcroft



Is Vista still a lemon on newer models of laptops?

TROUBLESOME VISTA

I have been bemused by suggestions in *PCW* that installing Microsoft Vista on older PCs may be a problem and that the safest bet is to put it on the most up-to-date PC you can get. I have to say that my experience is the other way around.

I decided to build a new PC choosing the then very new Gigabyte GA-MA69GM-S2H motherboard, two 1GB modules of Crucial DDR2 Ram and an Athlon 64 6000. Two SATA2 hard disks were also connected, together with a SATA DVD writer. I decided to try out Vista and bought an OEM version of Home Premium 64-bit.

Trying to install Vista was a complete nightmare – it just sat with the scanner oscillating and would go no further. Eventually, I found out by trial and error that substituting an IDE DVD writer for the SATA DVD writer would allow the installation to proceed.

I then added a further two 1GB modules of the same type from Crucial but, as before, Vista would not boot. However, with the aid of Crucial, the new modules were swapped to make sure that all four were identical – but Vista would still not run until I went back to two 1GB modules.

At the same time, I installed Vista 32-bit Home Premium on my home-built Shuttle SN45G, which is at least six years old, and it ran as sweet as a nut.

I then decided to build myself another PC with the new Gigabyte GA-MA78GSM-S2H

motherboard, Athlon 64 6400 dual-core CPU, two 1GB of Crucial Ram and a pair of SATA2 hard disks, as well as the SATA DVD writer that had caused the problems last time.

I used Vista 32-bit Home Premium, feeling that 64-bit was more trouble than it was worth. I was far from surprised when exactly the same problems were encountered. I tried everything, but with no joy. Yet Windows XP installs with no trouble at all and is running faultlessly – as does Linux, I might add.

I think your suggestions that Vista installation is easiest on new equipment rather than old needs to be reconsidered. I personally support the view expressed by some writers that Vista is a bit of a lemon, as Gordon Laing has found on his new laptop.

RG Willis



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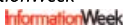
"The cool part is that the tool clusters those results within cubes, trees or other visual designs"

Ted Kemp, CNBC 

"...the battle over the search market is far from over"

Jeff James, Windows IT Pro 

"...an interesting take on Web search..."

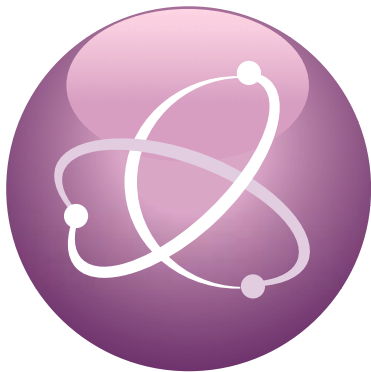
J. Nicholas Hoover, InformationWeek 

"...it features some really cool 3d flip implementations...and man did it shine..."

Rob Bushway, GottaBeMobile 

"...the heart of Ergo represents some exciting developments for the next stage in searching and organising documents."

Jason Whittaker, PC Advisor 



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Key dates

All voting is done online via the British Technology Awards website (www.britishtechologyawards.co.uk). The first round of nominations (the 'long list' nominations) is now complete, and a shortlist of the top nominations in each category has been published on the website, ready for the second round of public voting, which runs until 12 September 2008.

The winners in each category will be announced publicly on 3 October 2008. A full list of the terms and conditions for the prize draw and voting eligibility rules are available on the website (www.britishtechologyawards.co.uk).



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The voting process for the awards couldn't be simpler. Go to the 'Vote Now' section of the website (www.britishtechologyawards.co.uk) and for each category, you will find a dropdown list box. Simply browse through the dropdown list to view the shortlisted products in each category.

Once you've entered all your nominations, follow the on-screen instructions to enter your contact details (name and valid email address) and submit your entry. And that's it, but don't forget to bookmark the website so that you can keep in touch with news and updates about the British Technology Awards.

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Gordon Laing



gordonl@pcw.co.uk

Don't be afraid of network cables

If your wireless network isn't reliable, you may think the only choice is a spaghetti of network cabling, but there is a better way

If you're anything like me, choosing a new home involves more than just the number of rooms, proximity of key services and the standard of fitted suites. If you're a technology lover, there are always additional agendas that greatly influence your choice. I can't, for instance, look at a lounge area without trying to figure out where I'll put five loudspeakers and a large TV without at least two of them ending up in a fireplace.

Accommodating PC kit should be easy. There may be minor concerns over where your internet connection enters the home, but beyond that it's a case of just putting your computers on desks and using wired or wireless networking to link them up.

But is it really that simple? I recently moved into a new house and had to rethink my initial networking strategy. The internet connection

while I was attempting a critical file transfer. My network media players also kept cutting out.

I'm not blaming Netgear, or my neighbours unless they have a stack of conflicting wireless technologies; swapping radio channels also made no difference. My new home simply had thick walls and so there were only two other courses of action. One was networking over the mains (Homeplug), but this can still be prone to electrical interference. The other was to lay cables, but renting the house limits my options for hiding the cables.

Cables don't bother me, but for many people they're a big issue; indeed accommodating 20m of Cat-6 cabling without opening walls would be met with utter horror by many and rejected without discussion. But with wireless not working sufficiently and no possibility of moving the phone point, a cable was my preferred choice.

So I carefully made my way from one room to the other. The carpeted areas were relatively easy, as there's normally room between the hooks and skirting board to run a cable under the carpet's edge. It was also simple to tape the end of the cable to a stick and feed it under carpets at doorways. The trickiest parts were the sections running alongside units on hard tiling, but careful choice of cable colour and tape allowed me to discreetly secure it in place. The entire job took one hour, involved no drills or saws and is barely noticeable.

My network performance took a huge leap forward, and there were no interference or security issues. I even switched off my wireless.

The moral here is don't be afraid of laying network cables even from one end of your house to the other. Many people I speak to reject the idea before even trying, but it really is easier than you think to hide them. Certainly if you've been using wireless for anything other than sharing an internet connection, you'll be delighted by the reliability and performance boost.

The physical characteristics of my home may have ruled out wireless, but even given a good signal I'd still recommend using cables for non-mobile devices. They're faster (especially with a Gigabit switch), more secure and if you're serious about performance you won't look back. Network cables have a bad reputation in the home – let's try and change that. **PCW**

'The entire job took one hour, involved no drills or saws and is barely noticeable'

came into the opposite end of the house to where I wanted my main work PC so, keen to get up and running as quickly as possible, I opted for a wireless link. I realised I wouldn't have the bandwidth of my previous wired Ethernet network, but surely it would be sufficient for basic connectivity until I managed to look into cabling.

Sadly not. Everyone knows wireless networking is greatly affected by its surroundings, but I've rarely used a technology that delivers such wildly different experiences. In my old home, the wireless worked fine. My Netgear DG834N wireless router distributed a strong signal throughout the house and into the garden – even with other wireless networks within range.

Upon moving into my new house I was delighted – and more than a little surprised – not to find a single other wireless network within range. Surely this would be my best wireless experience yet, but almost immediately I ran into problems.

The main PC reported a signal that drifted between good and poor, regardless of the position of its antenna and the router in the other room. I thought a poor connection was still a connection nonetheless, but it frequently dropped, inevitably

Barry Fox



barryf@pcw.co.uk

It's the same old story for compatibility

As new media formats are introduced, consumers struggle to choose the right players. But do manufacturers know any better?

Every new technology creates the same scenario. The people selling the stuff – from company bosses, PR publicists and fluffy gadget magazines to the shop floor – haven't a clue how it works. When consumers can't use what they have bought they give up and buy a newer model.

But the credit crunch could make consumers stop junking stuff and expect it to work. The companies selling portable audio and video look set to be the first big losers. The original cassette Walkman created a new way of life. Sony was then bullied by its music division into the crippling Mini Disc with proprietary compression, vicious copy protection and user-hostile PC software.

The first Digital Walkman range was crippled in the same way. By the time Sony had admitted defeat on Atrac compression, the awful Sonicstage

NDS, the company that developed the Videoguard smart card encryption used by Sky for broadcasting, has been working with Sandisk on a USB stick with integrated smart card that locks stored video.

There is more confusion because MPEG4 is not a video standard but an umbrella for several incompatible standards. When I asked Sony UK which of the types its latest Video Walkman can handle, a month of emailing yielded no useful answer. This is not a trivial question, I kept reminding them; it is the difference between whether a movie plays or does not play.

Giving up on Sony, I used PC conversion software and the Pinnacle Transfer hardware device to convert unprotected MPEG2 files into a wide range of formats, transferring them to portable players and finding out by trial and error which ones play sound and pictures.

If anyone in Sony UK is interested, your Video Walkman handles the same H.264/AAC file format as an iPod or PSP games portable but, like the PSP, plays only files recorded with a resolution of 320x240 and 768Kbits/sec bit rate. Higher resolutions give 'unsupported format' error messages. Motorola's Moto Z10 multimedia phone has the same limitation.

The same files try to play but freeze and glitch on a Sandisk Sansa. An Archos player pops up a message telling the user to purchase the H.264 Video/AAC Podcast software plug-in for £15. It costs £15 to play MPEG2 video with AC3 audio.

It's not just the file format and resolution requirements that are a mess. The converter software that came with one Sony Video Walkman refused to convert MPEG2 files, even home TV recordings made with Sony DVD recorders. The reason given was that Sony Pictures was worried about DVD piracy. When I recently asked if this was still the case Sony UK said that paying an extra \$12.95 would buy an MPEG2 conversion upgrade. So much for piracy concerns.

The industry is sleepwalking into a situation where different players are needed to play different movies. People with stored video won't dare change to a different brand of player. So the early winners in the mobile video marketing game will take all. Wake up Sony, before it's too late again. **PCW**

'The credit crunch could make consumers stop junking stuff and expect it to work'

software and Magicgate DRM (digital rights management), Apple had won hearts and wallets with AAC compression, iTunes software and Fairplay DRM. Sony had to scrap its software and Connect online music sales site. But Apple will not license Fairplay. Meanwhile Microsoft offers Windows Media with its own DRM. So we are stuck with split standards for music downloads.

Apple hopes that iTunes video will repeat the success of its music sales. Paramount has a rival deal with Motorola using OMA (Open Mobile Alliance) DRM. Warner has fooled around with AOL. Services such as Sky's Anytime Skyplayer and the BBC's iPlayer use Windows Media DRM.

Warner and Fox are trying something different. A double-DVD set (*Harry Potter 5* and *Die Hard 4* in the US, and *I am Legend* in the UK) has a digital file copy of the film on the second disc. A use-once DRM key lets the file be copied to a PC. The file is protected by Windows Media and will not play on an iPhone or Playstation Portable. At well over 1.5GB, the *Die Hard* file is too big for most handhelds anyway. Both studios say they have plans for iPod- and PSP-compatible files, almost certainly with different DRM.

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Computer Shopper, Issue 241, May 2008

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Guy Kewney



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Head in the cloud

Accessing the cloud network for the occasional update is fine, but the economics will never add up for mere mortals

I've been playing with a few clouds. On balance, though, I prefer being more down to earth and would rather use my laptop. Being a freelance writer, there's a limit to how much 'cloud computing' (the latest buzzword to describe web-based computing) I can do. Most of the excitement these days is about cloud systems that give corporate IT departments extra resources. It's outsourcing with bells on – find a company that runs the remote system, and you pay to use it. But we can all have a go – and I found some interesting toys.

The obvious drawbacks of cloud computing are that you're stuffed if you can't access the internet. And it's all too easy to drop off the web; even in a major metropolis like London, all you have to do is travel the London Underground, and ping – your connection has vanished.

'Ask any ISP how it will cope with streaming and it will admit to increasing its prices'

This made me probably a rotten person to play with the Pocketsurfer, a small, Psion-sized information appliance that gives you a very low-cost way of reaching any website. All you need is a GPRS link and the purchase price of the device (around £150), which includes a normal amount of web time per month. It needs some tweaks before I'd regard it as having reached version 1.0, but even so it's easy to see why people like it. Unlike even the best mobile phones, it has a proper web-shaped display and it is possible to view ordinary PC-style web pages. But again, if you travel on the London Underground, it will become just a weight in your pocket.

I also played with the Mobiu. It's a USB memory stick, with pretty nearly no memory on board. What it does do is give you pretty well iron-clad secure access from any PC on the web, 5GB of internet storage for your important data, as well as the online applications to run them. Its strength is the standard mobile phone Sim card, plus a Pin, which makes it really hard for someone to get access to your data.

I've also looked at Portable Apps, which takes a standard application, produces a version that sits

on a big USB disk (Flash memory is fine) and includes all the required system furniture, such as .ini files. In my opinion, this is the way to go.

But when people talk about accessing the cloud with a dumb terminal, what do they mean by 'dumb'? What they actually mean is accessing the cloud with a relatively low-powered PC or information appliance, but one that has several hundred times the speed, data storage capacity, display response and even usability of the standard desktop machine of 15 years ago. And, to remind you of the figures, in 1993 I had a 66MHz PC running Windows for Workgroups, with around 20MB of storage and around 2MB of onboard Ram.

That wouldn't be enough for a standard mobile phone today. Compared to an iPod Touch, it was not a computer. Nonetheless, it was able to do all my data processing at the time. And its big advantage over a cloud terminal is that if the mains went dead, you didn't have to throw away all the food in the freezer, because it carried on working nonetheless.

Avant Go started the idea of giving Palm users newspapers to go: you downloaded journals of your choice onto your handheld and you could update them for breaking news as the day went on. The rule of thumb was you had all the data you needed during the day, you could take it with you and no more than five per cent of it would have become out of date before you looked at it.

Using the internet cloud for occasional updates is fine. But downloading data is not free. It may seem so, because most of us aren't spending all day downloading. However, ask any ISP how it plans to cope with the current boom in multimedia streaming – with services such as BBC iPlayer and Bittorrent sharing – and it will admit it will have to increase prices. Mobile broadband is also a temporary bubble – four years from now, you won't be able to afford it, certainly not at the rate needed to support current IT work over the air.

When companies such as Mobiu or Windows Live Mesh offer 100GB and unlimited data traffic, these will be (roughly) level with a small laptop in capacity. But they won't do that, as they want to make a profit. It's a nice idea, but mainstream? I don't think so. **PCW**

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THE REVOLUTION CONTINUES

When Asus launched its Eee PC to much fanfare last year, we fully expected other manufacturers to follow suit. In this issue we've got reviews of models from HP and Acer as well as a new Eee PC from Asus, while MSI's Wind is just around the corner.

With their low price tags and slim dimensions, these miniature marvels have won many fans. It's not such good news for Microsoft and Intel, though, which must be concerned that their joint ultra-mobile PC (UMPC) venture will be derailed.

While the small screens of these notebooks are fine on the move, when at home or in the office we'd recommend you hook them up to a larger display. And as you'll see in our group test on page 95 you can now bag a stunning 24in screen for well under £300.

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OUR SCORING

Excellent ★★★★★ Very good ★★★★☆ Good ★★★☆☆ Below average ★★☆☆☆ Poor ★☆☆☆☆

OUR AWARDS

Editor's Choice: The best product in a comparative group test. Anything that wins this award is of better quality than its competitors.

Recommended: A product that combines great features, usability and value for money.

Great Value: Not the best in class, but a product that has superior features and performance for the price.

Best Buy: The best product in its class in terms of performance, features and value for money



REVIEWS



'All things considered there's no doubt that the 901 is the best Eee notebook yet'

Read the review on page 35

NOTEBOOK PC

Acer Aspire One

An ultraportable notebook for just £200



The Aspire One is a great-value little notebook

You could say that it's just typical: after waiting more than a decade for an affordable, portable notebook computer, three turn up at once.

Acer's Aspire One is launching alongside the Asus Eee 901, reviewed on page 35, but even in an increasingly crowded market it stands out thanks to its low price.

The Aspire One looks smart, is available in white or black, and features a shiny black bezel around the 1,024x600 pixel display. The screen isn't very bright but its resolution is good enough for web surfing and office work. Acer has employed some slightly over-zealous font smoothing, though, so text appears less pin-sharp than it does on the Eee 901.

All the usual sockets are located on the two sides: three USB sockets, Ethernet, VGA, headphone, microphone and two multiformat card readers. The card reader on the right-hand side works as usual, but the one on the left is designed for more permanent storage expansion; stick a memory card into it and its capacity is seamlessly added to that of the main SSD.

The One's slim standard battery has a capacity of just 2,200mAh, so despite some useful power-saving tricks, such as throttling the processor down to half its top speed when possible, it's not particularly long lived. With the screen illuminated but wireless networking disabled, the One gave a low-battery warning after one hour, 45 minutes, then expired after two and a quarter hours. It pales in comparison to the stamina of the Eee 901 and anyone who travels regularly will need to consider the £80, six-cell battery option.

If the battery is a little disappointing, though, the One's keyboard is something to celebrate. Whereas the Eee 701, 900 and 901 share a keyboard that's too

small to make prolonged typing comfortable, the One has a well-designed keyboard with larger keys that we quickly adjusted to. This is surprising, as at roughly 25x17x3cm the One isn't much bigger than the Eee 901, but the extra two and a half centimetres of keyboard width make a real difference. Underneath, the touchpad has buttons on either side, rather like the HP Mininote, but a function key can disable the touchpad entirely if it gets in the way when typing.

Inside the One you'll find a 1.6GHz Intel Atom processor, 512MB of Ram and an 8GB SSD. The spec is high enough to run a few browser windows and a word processor happily at the same time, or to play a DivX video file. A small fan cools the system but it's quiet enough.

Windows XP Home will be available on more expensive Aspire One models but this £200 model uses a version of Linux. Like the Eee, it uses a simplified program launcher rather than a full desktop, with a selection of useful programs installed. We liked the ability to start Firefox and Openoffice Writer from the front screen, and the email and instant messaging programs can cleverly connect to several services, but generally the Eee's menus, and taskbar in particular, feel a little more polished. The Linux system takes about 20 seconds to start up and 15 to shut down.

All in all, the Aspire One is hard to criticise. It has a few faults (its software could be better and the battery won't suit travellers), but the combination of a good keyboard and Openoffice makes it a viable tool for work as well as for sofa surfers. And, although the Asus Eee 901 betters it in a few areas, at just £200 the One is the best-value mini notebook out there.

Tom Royal

Verdict

Pros Stupendously cheap; great keyboard; clever multi-card storage system

Cons Mediocre battery; Linux OS feels a little rough around the edges

Overall Staggeringly good value, with a decent screen and good keyboard

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £200

Contact Acer 0870 853 1005

www.acer.co.uk

Specifications Intel Atom N270 CPU (1.6GHz) • 8.9in display (1,024x600) • 512MB Ram • 8GB solid-state drive • Three USB ports • Ethernet • 802.11g • VGA-out • Two multiformat card readers • 250x117x30mm (wxdxh) • 985g

NOTEBOOK PC

Asus Eee 901

The best Eee yet – but can it stand up to the competition?



This is the third notebook we've seen from Asus' Eee range, but in many respects it's version two of the Eee. The 900, released only a few months ago, simply added a larger screen and Windows XP to the original design, but the 901 has a new case, better networking and, crucially, a new processor inside.

The Eee's system tool coyly describes its CPU as an "Intel Mobile Processor" but we understand that it's Intel's brand-new Atom N270, running at 1.6GHz – the same as used in Acer's Aspire One, reviewed on page 34. This new chip is paired with 1GB of Ram and a large SSD for storage: 20GB for this Linux version or 12GB if you choose Windows XP.

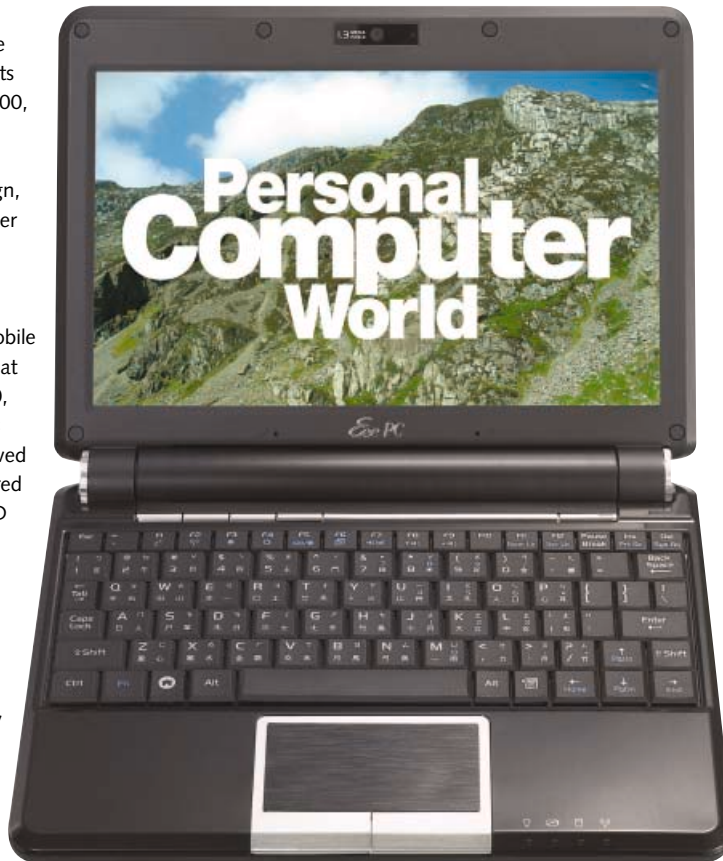
The Atom runs at a significantly higher speed than the Celeron chip used in older Eee models and the 901 certainly feels responsive when clicking around the Linux operating system. There's a cooling fan inside the case, but this is very quiet.

Perhaps more importantly, the combination of the Atom processor and a new and improved 6,600mAh battery pack gives the 901 an outstanding lifespan when away from mains power. With wireless networking disabled but the screen on, it ran for nearly six and a half hours in our test.

One thing about the Eee 901 remains depressingly similar to previous models: the keyboard. Although barely an inch narrower than that of the Aspire One, it's too small to type on comfortably, so writing anything longer than an email soon becomes a chore and even web addresses are easy to mistype. On the other hand, the touchpad is superb.

Although the case looks different from older models, with rounder corners and the Asus brand name relegated to the bottom plate, the sockets around its edges are nothing new: there's a VGA output, three USB sockets, headphone and microphone jacks and an SD memory card slot for expansion. Above the screen there's a 1.3-megapixel webcam, though, and there are two microphones below the screen. New additions inside the case include Bluetooth and a faster 802.11n-compatible wireless network adapter.

The 8.9in 1,024x600 display is fine for surfing the web or working on documents and, although it has



The 901 is the best Eee notebook yet with its host of new and useful features

the same resolution as that on Acer's Aspire One, the neater font smoothing used by the Eee makes text look clearer and sharper. The menu-based Linux operating system also shows the benefits of Asus' experience with the earlier Eee 701. It uses the same tab system, with each tab offering a different choice of large, clear program links. The taskbar across the bottom of the screen includes useful information about USB devices and performance settings as well as the usual power and network indicators. Staroffice, Firefox, Thunderbird and the instant messaging client Pidgin are installed as standard. One new and unusual bonus is the Internet Storage icon – click this and you can connect to the 20GB of online storage that's provided free with each Eee 901.

All things considered, there's no doubt that the 901 is the best Eee notebook yet. It takes the great screen from the Eee 900 and the 701's clever Linux operating system, and adds a superb battery and better networking. On the other hand, it faces strong competition from the likes of Acer's Aspire One, its keyboard is as frustrating as ever and at £319 it's fairly expensive. It is without doubt a great second computer if you have another PC to type on, but work and home users should consider the cheaper Aspire One – with an extra battery if needed – instead.

Tom Royal

Verdict

Pros Excellent battery life; neat Linux operating system; Bluetooth

Cons Quite expensive; fiddly keyboard

Overall The best Eee so far, but the Acer Aspire One is better value

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £319

Contact Asus <http://uk.asus.com>

Specifications Intel Atom N270

CPU (1.6GHz) • 8.9in display (1,024x600) • 1GB Ram • 20GB (Linux)/12GB (XP) solid-state drive • Three USB ports • VGA-out • Ethernet • 802.11n • 1,138g

NOTEBOOK PC

HP Mininote 2133

The corporate heavyweight wades in with an 8.9in laptop



The Mininote 2133's keyboard can challenge much bigger notebooks in terms of ease of use

The success of the Asus Eee PC isn't in doubt and, with some businesses hoping to kit out their entire workforce with 1kg wonders, HP's entry into this market is a promising step.

The Mininote 2133 looks very attractive and the build quality is good. The biggest problem with ultraportable notebooks is invariably the keyboard, but HP has done an impressive job with the 2133, again strengthening its appeal to businesses.

The keyboard stretches entirely to the left and right edges and is, according to HP, 92 per cent of the size of a regular notebook's keyboard. It's very easy to type on and we'd even go so far as to say it can challenge much bigger notebooks for ease of use. There are mouse buttons to the left and right of the touchpad, rather than below, which saves space.

An excellent lock button sits between the touchpad and keyboard, which toggles the trackpad on and off so you don't accidentally move the cursor when typing. Another neat touch is the Wifi on/off switch and, unlike many small notebooks, an Express Card slot is included for future upgrades.

Two speaker bars sandwich the screen, pumping out impressively loud sound for a portable device, while the 8.9in screen has a bright (153.3cd/m²) backlight and detailed 1,280x768 resolution. This is the highest resolution you'll get on a small and cheap notebook – the rest rely on a 1,024x600 resolution, which can pose problems for poorly designed programs.

The screen's glossy coating is thick, making it very prone to reflections. Corporate laptops tend not to use reflective coatings, as they are less suitable for bright working environments. On the other hand, glossy coatings do improve perceived contrast, which is

preferable for movie watching, but firing up video on the 2133 reveals its dark side. Full-screen video, be it a standard-definition MPEG-4 clip or even Youtube, becomes unwatchable because it drops so many frames.

Such poor performance is quantified by a rock-bottom result of 671 in PCmark05, with the CPU result of 655 less than half that of an Eee PC 900, which achieved 1,462. A Via C7-M 1.2GHz CPU is the culprit and even 2GB of Ram and a 120GB hard drive doesn't do enough to raise the scores.

The PC's low-end Via Chrome9 graphics means it doesn't meet Microsoft's standards for running Windows Vista Business, which comes installed. In fact, it only qualifies for a Vista Basic sticker. That said, Vista performance wasn't too bad, booting up in one minute and 10 seconds. A Linux version is also available (£350) with a smaller battery.

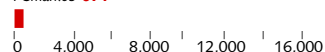
The Vista version has a large 55Wh battery, which pushes the weight and centre of gravity uncomfortably to the rear of the machine, but it did last three hours and 44 minutes in our reader test, an hour longer than the Eee PC 900.

At £452, this isn't a particularly cheap sub-notebook. And at 1.45kg, excluding power adapter (1.9kg including), it's not especially light for something with no optical drive. The HP Mininote 2133 is one of the most mixed bags we've seen in a long time. Its keyboard, screen resolution, speakers and build quality are superb, but the awful performance, relatively heavy weight and glossy screen make it incredibly frustrating to use. It's fine for word processing, but Atom-based devices from MSI, Acer and Asus are cheaper and better all-round notebooks.

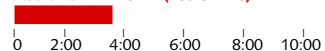
Emil Larsen

Performance

PCmark05 **671**



Mobilemark 2007 **3:44 (hours:mins)**



Verdict

Pros Solid and classy chassis; superb keyboard; great touchpad lock; high-resolution screen

Cons Poor system performance; very poor video playback; relatively heavy

Overall With a better processor and less glossy screen, this would be the ultimate workhorse – but it's not

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £452

Contact HP 0845 270 4222
www.hp.com/uk

Specifications Via C7-M 1.2GHz • 2GB Ram • 120GB 5,400rpm hard disk • 8.9in 1,280x768 LCD • Via Chrome9 graphics • Soundmax HD audio • 802.11a/b/g Wifi • Bluetooth • Webcam • SD Card reader • 54mm Express Card slot • VGA out • 2 USB ports • 270x165x33mm (wxdxh) • One-year RTB warranty

HOME THEATRE PC

Sony Vaio VGX-TP2B

Windows Media Center in a strange new shape



The Windows Media Center software and remote control mean you can run things from the comfort of your sofa without a keyboard or mouse



It's fair to say that home-entertainment PCs tend towards an unorthodox design. They need to be able to fit in with people's hi-fi and television equipment, as well as with the design of their living rooms, rather than being stuck away under a desk. As a result, manufacturers often come up with weird and wonderful chassis designs.

Sony is no different, with its new VGX-TP2B system resembling a hat box or some sort of ersatz ornament. While it looks odd at first sight, its cylindrical shape is actually quite space-efficient and, being a Sony device, it's very well designed.

The front of the case (or, being circular, one section of it) houses a combined Blu-ray reader and multi-DVD writer (this includes the ability to read and write DVD-Ram discs), two USB ports, a mini-Firewire 400 socket and two memory card readers (one for SD-sized cards and one for Sony's own Memory Stick format).

The computer is loaded with Windows Vista Home Premium, which includes the excellent Windows Media Center software that forms the heart of the computer as an entertainment device. It comes with a decent Windows Media Center remote control, so you can run things from the comfort of the sofa without the need for a keyboard or mouse. A compact and light wireless keyboard is included, but there's no mouse – instead you get a touchpad at the bottom of the keyboard.

An Intel Core 2 Duo T8100 clocked at 2.1GHz drives the computer and sits alongside 2GB of DDR2-667 memory. That was enough to lift it to a respectable 5.1 score in the Windows Experience Index and 5,590 in PCmark05. Graphics are less impressive. There's an Nvidia GeForce 8400M GT card installed, with 256MB of video memory, which, although decent enough for

watching and editing video, isn't up to much when it comes to playing games. The unspectacular 3Dmark05 score of 3,101 backs this up.

Still, a computer such as this is very much designed with video and audio playback in mind, and it includes a couple of nifty features to that end. There's a wired Ethernet socket along with 802.11b/g wireless. It has a hybrid (digital/analogue terrestrial) TV tuner with a socket on the back of the case for an antenna connection. Also on the back are a composite/S-video output, two more USB ports, a VGA socket, audio input and output, and an HDMI port for outputting 1080p high-definition content to compatible TVs.

Four USB ports isn't much these days, but again, home-entertainment PCs are less likely than standard desktops and notebooks to have lots of devices hanging off them. There's a digital optical (S/PDIF) sound output, but other than that there's only a two-channel stereo output and microphone socket, so if you want surround sound, you'll need to go through the optical connection to an amplifier; those with dedicated surround-sound speaker systems without optical inputs will be stuck.

Home-entertainment PCs are designed to be left on much of the time and, drawing a maximum of 120W, this one won't cost the earth in electricity bills if you do so. It's also fairly quiet – there's a low hum, but it's not too annoying and you certainly won't hear it while watching a movie or listening to music.

At £900, the TP2B is fairly expensive for a Windows Media Center PC (see the £320 Philips LRPC7500 at www.pcw.co.uk/2213334 for a cheaper, if less stylish, alternative), but it packs a lot of power and plenty of features into its small and round case.

Anthony Dhanendran

Performance

PCmark05 **5,590**



3Dmark05* **3,101**



*Tested at 1,024 x 768 in 32-bit colour

Verdict

Pros Looks great; performs well; HD output

Cons Quite expensive for what you get

Overall It's expensive, but this Windows Media Center performs well and comes with a Blu-ray drive

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £900

Contact Sony 01932 816 000
www.sonymstyle.co.uk

Specifications Intel Core 2 Duo T8100 (2.1GHz) • 2GB DDR2-667 Ram • Nvidia GeForce 8400M GT 256MB • 500GB SATA hard disk • Blu-ray/DVD writer • Hybrid digital/analogue TV tuner • Remote control • HDMI • S/PDIF • Four USB ports • Firewire • Memory card reader • Ethernet • 802.11b/g • Windows Vista Home Premium

DESKTOP PC

Cyberpower Liquid Gamer Infinity

Water-cooled, overclocked and supremely fast



The Liquid Gamer Infinity's blue fans and UV-reactive data cables all combine to create a feast for the eyes

Water cooling used to be the domain of the true enthusiast, hidden away in a darkened room trying to get the last drop of performance from a highly overclocked system – but not any more. Thanks to easily installed water-cooling kits, most people can now have a go. There are also more manufacturers offering water-cooled options for those wanting a fast, stable system out of the box.

Cyberpower's Liquid Gamer Infinity SLI offers a water-cooled, overclocked dual-core processor and SLI graphics setup, together with fast tuned memory. Sitting under its well-made Thermaltake CPU cooling block is one of the current overclockable dual-core CPUs of choice – Intel's E8400. As standard, this comes with a 3GHz clock speed, 6MB of L2 cache and a 1,333MHz FSB (front-side bus). By using water cooling, Cyberpower has got it to run stably at an impressive 4.15GHz.

Backing up the CPU is 4GB of OCZ Reaper PC2-8500 DDR2 memory. As standard, this runs at 1,066MHz, but with its built-in heatpipe cooling, it's also overclockable; in the Liquid Gamer Infinity it's running at 1,100MHz at a latency of 5-5-5-15.

All of this, as you might expect, gives the Liquid Gamer Infinity plenty of power. Indeed, it's the fastest system we've ever tested, with a PCmark05 score of 11,344 and 5,694 in the more stressful PCmark Vantage.

The CPU sits in a good choice of motherboard: an EVGA 780i SLI. This uses Nvidia's Nforce 780i SLI chipset and, although the board comes with passive heatsinks, Cyberpower has used the optional fan to cool the Northbridge. This helps with stability, although the noise from the fan goes against the idea of a silent, water-cooled system.

Graphics are driven by a pair of BFG Geforce 8800GTS cards configured in SLI mode. These cards have faster clocks than normal, but Cyberpower has gone a stage further by turning up the core clock to 780MHz (a standard 8800GTS runs at 650MHz) while the memory is clocked up to a 1,000MHz (2,000MHz effective). To enable this amount of overclocking, Cyberpower has used a couple of Dangerden graphics cooling blocks to keep the cards cool and stable.

Graphics performance is also impressive. In 3Dmark05 it scored 26,930, while in 3Dmark06 it clocked 19,708.

All this hardware needs a case with a lot of internal space, and the Thermaltake Armour LCS certainly delivers. With plenty of internal space at its disposal, Cyberpower has built a very neat and tidy water-cooling system. The radiator stands vertically, tucked away in the lower seven-bay drive cage, while the reservoir and pump sit neatly on the base of the case.

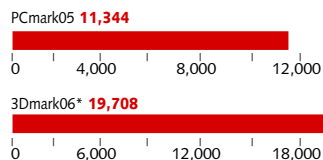
The size of the case also lends itself to tidy power and data cable runs, and the Liquid Gamer Infinity is one of the best systems we have seen in a very long time.

With all this power-hungry hardware lurking about, you'll also need a good power supply. The colourful Tagen Piperock 900W modular power supply sits in the top of the case and more than takes care of the needs of the various components. Sitting next to the power supply in a three-bay drive cage is a 1TB Samsung hard disk.

As you can see from the photo, if you like your PCs nice and showy, then this system won't disappoint. Blue fans, UV-reactive data cables, green die in the cooling liquid and a power supply with lit outlets all combine to create a feast for the eyes.

Simon Crisp

Performance



*Tested at 1,024 x 768 in 32-bit colour

Verdict

Pros Well built; performance; design

Cons Motherboard fan detracts from silent water-cooling; pricey considering there's no monitor

Overall The fastest desktop PC we've seen to date, combining great build quality with blistering performance

Features ★★★★★
Performance ★★★★★
Value for money ★★★★★

Overall ★★★★★

Price £1,499.30

Contact Cyberpower 0800 019 0863
www.cyberpowersystem.co.uk

Specifications Intel Core 2 Duo E8400 (3GHz, overclocked to 4.15GHz) • 4GB OCZ Reaper Ram • Two BFG Geforce 8800GTS (512MB GDDR3) • Tagen EZ-Series Piperock 900W PSU • Water-cooling kit • Lite-on DVD writer • Samsung F1 1TB hard disk • Creative X-Fi Extreme Gamer soundcard • Windows Vista Home Premium 64-bit • Three-year warranty

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SAT NAV

Binatone T430

A new entry into the GPS market from Binatone, with an interesting feature



The Binatone T430 includes a digital camera designed to be strapped to the boot of your car



With its range of fairly basic, but effective, navigators that perform very well on the road, Binatone has impressed in the past. Its new T430 comes with the rather innovative addition of a digital camera designed to be strapped to the boot of your car and act as a rearview camera.

The sat nav itself is a compact device sporting a 4.3in display, stylus and SD-card slot for multimedia files or additional maps. You get UK and Ireland coverage preinstalled, along with a safety camera database, Bluetooth for pairing your phone and multimedia player for videos, photos and music. We found the device quick to start up and easy to manage in terms of planning a route. While the on-screen buttons at first appear quite small, we managed to get by quite nicely without resorting to using the stylus.

Time to first fix was less than a minute and route calculations were extremely quick. Route information is more detailed, but otherwise performance is pretty similar to previous models. This is no bad thing and, although the device omits useful features, such as advanced lane guidance and text-to-speech for road names, we found voice instructions to be clear and accurate, and the maps were very easy to follow.

Zoom and elevation controls are located on the main map view, along with route information, a mute control for volume and access to a tabbed menu that allows you to view the itinerary and further customise the behaviour of the display. We were particularly impressed by the range of settings available to fine tune how the navigator guides you around, including advanced features such as off-route sensitivity. All of this works together very well and gives you a good feeling of control.

Elsewhere, the multimedia features are capable enough and, since the maps are loaded into the internal storage, the SD-card slot is free for use with your media. However, since you need to exit the application to get back to the route-planner, you can't play back content while using the navigation software.

The Binatone T430 certainly succeeds as a navigator then, and we were interested to see how the digital camera works and whether or not it's a worthy addition. The camera is designed to be fitted above or below the rear number plate of your car and comes with all the necessary attachments to help you do this.

It's powered by the reversing lights, which not only makes it easy to keep wires tucked away, but also means that it activates automatically when the car is placed in reverse, turning the 4.3in display on the navigator into a rearview camera. We tested this out for ourselves and were impressed. The refresh rate is very good and the full-colour image is just about sharp enough to pick out smaller details.

When you slip the car into reverse the screen changes right away and the signal is transmitted via wireless from the docking cradle of the GPS to the camera itself. The unit is fitted with a fish-eye lens so it can offer a wider-angle of view and, while it does succeed in this, it means you'll need to practice a bit to get used to exactly how far away from objects you are. How often you'll use it is another matter, but it will certainly impress your passengers.

The T430 is an attractive package and, perhaps best of all, it's very reasonably priced, particularly when you consider you're getting a mid-range navigator and wireless camera in the same box.

Paul Lester

Verdict

Pros Clear and accurate navigation; customisable; supplied camera integrates well; reasonably priced
Cons Media playback doesn't work while navigating

Overall Binatone's T430 is an effective navigation tool and, while it lacks a few extras, is great value for money

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £179.99

Contact Binatone
 www.binatonecarrera.com

Specifications 4.3in display (480x272) • UK and Ireland maps • 256MB internal memory • SD-card slot • Up to 3.5 hours battery life • 117x19.5x80mm (wxdxh) • 180g

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28IN TFT

Hanns.G HG281DJ

A super-sized, high-quality display at an affordable price



The first thing you notice about this display is its 28in size – not simply the physical dimensions of the screen, but also the enlarged type and icons, since it has the same 1,920x1,200-pixel resolution as a 24in monitor, so the individual pixels are much bigger.

We were pleased to see that, unlike with some other large-screen displays, the grid lines between the pixels were almost invisible, keeping images smooth and text easy to read. If your eyesight isn't great, then this monitor could make things a whole lot easier for you.

Fitted with a pair of video inputs, the HG281DJ can accept analogue video via the standard VGA port and digital connections via HDMI. It will also accept high-definition analogue component video via an adapter, which is good news if you want to use the display for gaming on an original model Xbox 360.

At 500cd/m², this is a very bright screen, so you can make full use of its TV-like proportions for watching HD video in well-lit rooms without difficulty. Contrast levels could be better – there's some noticeable backlight bleeding in dark scenes – but overall the HG281DJ acquits itself rather well for a TN panel and is capable of delivering vivid, saturated colours beyond our expectations. However, one major omission is the lack of flexible scaling options for 16:9 and 4:3 inputs, meaning you'll have to rely on your PC graphics card for that.

Externally, the casing is robust and well made, if a little uninspiring, with a bezel that's rather thick by today's standards. The power switch and menu controls are mounted vertically down the right-hand edge of the case, making them rather frustrating to use as you can't read the labels and look at the screen simultaneously.

If you're in the market for a large screen, the HG281DJ is a decent quality display that won't break the bank.

Paul Monckton

Verdict

Pros Large display; vivid colour response; brightness; HDMI input
Cons Weak contrast ratio; control positioning; lack of scaling options
Overall If you want a decent, extra-large display for gaming or stress-free work use, this Hanns.G TFT will serve you well

Features ★★★★★
Performance ★★★★★
Value for money ★★★★★
Overall ★★★★★

Price £399

Contact Hanns.G 0871 666 0850
www.hannsg.com

Specifications 27.5in viewable display • 16:10 aspect ratio • 1,920x1,200 resolution • 0.309mm pixel pitch • 500cd/m² brightness • Contrast ratio: 800:1 • Two 2.5W speakers • VGA (with component video support), HDMI (with HDCP support) • 668x211x486mm (wxdxh) • 10.8kg • Three-year warranty

26IN TFT

Viewsonic VA2626wm

A large screen with good, but not exceptional, performance



With a native resolution of 1,920x1,200 pixels, this display gives the same level of on-screen detail as a 24in monitor.

However, with a pixel pitch of 0.2865mm, it's noticeably easier on the eyes. There's currently no 24in model in Viewsonic's VA range, so the company is clearly hoping to tempt people to make the leap from 22in to 26in.

The VA2626wm does produce a bright and very clear image, although the pixels themselves are rather more noticeable than on a smaller display. Also, if you

look very closely, and we do mean very closely, some motion artefacts can become apparent as your eyes flick across the screen.

Bigger screens are also great for a more immersive gaming experience, with resolutions capable of displaying full 1080p HD content. Here, the HDMI port is a welcome addition, bringing the total number of video connections up to three, including the DVI and analogue VGA sockets. However, one important omission is that there's no 1:1 scaling option, which means 1080p inputs get stretched to 1,200 pixels high.

Although generally good, there's nothing superlative about any of our lab results for this display. If we were to complain about anything, it would be the slightly lacklustre contrast ratio when compared to 24in alternatives, and the fact that at this screen size, the slightly restrictive viewing angles of TN technology can become a little more apparent. A height-adjustable stand would have helped here, but sadly the one supplied offers only a rather shallow tilt adjustment.

At this price, the VA2626wm costs only a little more than an entry-level 24in display, but feels a lot bigger. It's also a good way to increase your productivity without straining your eyes and giving your games a visual boost at a size approaching that of a TV set.

Paul Monckton

Verdict

Pros Large text/icon size; high brightness; build quality; HDMI
Cons Visible pixels; tilt-only stand; no USB; no 1:1 scaling option
Overall A well-priced display with good, although not outstanding, performance

Features ★★★★★
Performance ★★★★★
Value for money ★★★★★
Overall ★★★★★

Price £329

Contact Viewsonic
www.viewsonic.com

Specifications 25.5in display size • 16:10 aspect ratio • 1,920x1,200 resolution • 0.2865mm pixel pitch • 350cd/m² brightness • Contrast ratio: 800:1 static; 3000:1 dynamic • VGA, DVI-D, HDMI inputs • 596x254x480mm (wxdxh) • 7.4kg

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WINDOWS SMARTPHONE

Toshiba Portégé G910

The phone that thinks it's a notebook



As powerful as modern mobile devices are, they suffer when it comes to inputting data. The Toshiba Portégé G910 aims to address this by providing a full keyboard inside a clamshell design.

First impressions leave you in no doubt that this Windows Mobile 6 device is designed for business users. The front is basic and features a small display that can be used to view missed calls or the time. However its small size means it's for quick reference only. A standard mini-USB socket is used for both

synchronisation and charging, while a micro SD card slot lets you increase the memory capacity. There's also a fingerprint scanner, which is an excellent way of ensuring a high degree of security without using passwords. This scanner can also be used to launch programs with a finger swipe or as a scroll wheel in long documents.

Moving inside reveals a landscape screen with four shortcut keys down each side, backlit keys and a camera for video calls. There is also a 2-megapixel camera at the rear, along with an LED for use in low-light conditions. The quality of the camera isn't great but reaches the standard we would expect for a device such as this.

A GPS receiver is also built into the G910, but you don't get any sat-nav software included; basic navigation can be performed by downloading Google Earth.

Ultimately, the limited front display means that anyone wanting to use it first and foremost as a phone should look elsewhere. The fingerprint scanner and keyboard, along with HSDPA and Wifi support, make the Portégé attractive to anyone needing to work securely on the move but many will prefer to opt for one of the new breed of cheap notebooks, such as the Asus Eee 901 or Acer Aspire One.

Tim Smith

Verdict

Pros Small; good keyboard; fingerprint security; GPS receiver; HSDPA

Cons Limited front display; expensive; no sat-nav software

Overall Good for mobile workers focused on data and web browsing but has its limitations when used as a mobile phone

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £399

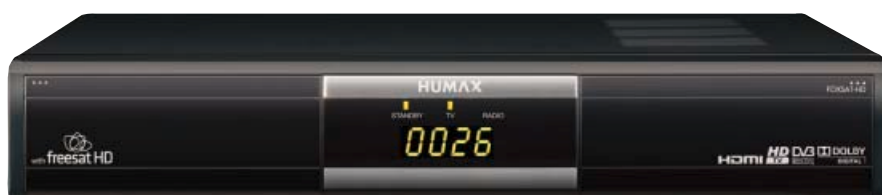
Contact Toshiba 0870 444 8944
www.toshiba.co.uk

Specifications 3in display • 128MB Ram • Micro SD slot • 2-megapixel camera • VGA camera • Bluetooth 2.0 • HSDPA • Wifi • GPS receiver • Standby up to 330 hours • Talk time up to 265 minutes • Windows Mobile 6 Professional • 117x19.8x64mm (wxdxh) • 183g

FREESAT RECEIVER

Humax Foxsat-HD

Get free-to-air HD channels via satellite



A joint venture by the BBC and ITV, Freesat provides free-to-air TV, including HD channels, via satellite (read our Freesat feature on page 83 for more information).

Various Freesat set-top boxes have appeared on the market, with the Foxsat-HD from Humax the first to arrive in our labs. It's a compact device and, after detecting our satellite signal, prompted to search for a software update. After a couple of minutes, the unit was busy searching for channels.

Scart and component outputs join HDMI-out at the rear of the box. We were initially excited to see an Ethernet port but this is not yet used – Humax plans to use it for new Freesat services in future.

The big appeal of Freesat is the prospect of free HD channels. However, at present all you get is BBC HD and ITV HD; more will undoubtedly arrive soon but many will be put off by the meagre selection.

Picture quality – both HD and standard definition – will ultimately depend on your TV. We were very impressed when testing on a Samsung 32in screen but on occasion we found the lip sync to be slightly out when watching BBC HD, which is something a reboot usually solved.

There's a lip sync adjust tool but this will only place a delay on the audio, so if the problem is that the audio is already delayed, it won't help.

The Foxsat-HD is well designed and benefits from clear on-screen menus but the occasional lip sync problem we encountered when viewing BBC HD is a concern. It may be sorted out in a future software update but at present it detracts from the HD experience. And whether two HD channels is enough to lure people into investing £149 in a receiver and installing a satellite dish (for about £80) remains to be seen.

Will Stapley

Verdict

Pros Easy to install; quick setup; intuitive menus; good-quality HD picture

Cons Occasional lip sync problem with BBC HD; Ethernet port not used

Overall The Foxsat-HD impresses as one of the first of its kind, but the lip sync needs sorting and the lack of HD channels limits its appeal at present

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £149

Contact Humax 0870 247 8800
www.humaxdigital.com

Specifications Freesat receiver • One LNB input • HDMI, Scart (in/out) and component outputs • Resolution formats: 1080i, 720p, 576p, 576i • DVB-S2 and DVB-S compatible • Ethernet port • EPG • Optical digital audio out • 280x200x45mm (wxdxh) • 1.5kg

VIDEO SURVEILLANCE SYSTEM

Qnap NVR-1012

This compact kit enables you to set up a video security system in minutes



The NVR-1012 is a network-attached storage (Nas) device with some very specific added functionality. It can be used as a basic Nas, with the usual network file sharing and user access control you'd expect, but also doubles up as a security system.

The main unit comes without a hard drive, but we found installation very simple and most Sata drives are compatible. Also available as a standalone device, the NVR-1012 is a kit bundled with a pair of IP video cameras. These come with their own separate

installation software and setup routines, and can be configured to use either wired or wireless networking.

Designed primarily for security purposes, the cameras don't produce the best images. Colours are quite a long way off natural-looking, but their high infra-red sensitivity enables them to produce clear pictures of all the action even in darkened rooms, where night view mode can be enabled.

Once the cameras are configured on your network, you can access them directly using their built-in web interfaces, but the purpose of the system is to combine and control multiple cameras from a single server.

To attach the cameras to the server, select the correct camera type from a dropdown list of compatible models and type in the security credentials.

The server can then monitor up to four cameras simultaneously, recording sound and video manually, at scheduled times or in response to alarms or motion detected in the field of view.

Recordings are saved in AVI format for playback either through the device's own interface or in the media player of your choice via the network.

The NVR-1012 works well and has lots of features, including two-way audio, Gigabit Lan and external hard drive expansion with Raid support. *Paul Monckton*



Verdict

Pros Ease of use; four-camera support; video and audio recording; motion detection; night view mode

Cons Plastic housing; poor camera image quality in daylight

Overall Easy to use and packed with features, the NVR-1012 is an easy one-box solution for home or office surveillance

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £510

Contact Qnap www.qnap.com

Specifications Nas drive with two wireless video cameras (640x480 resolution) • Requires one Sata hard drive • eSata port • Gigabit Lan • UPS support • Auto backup of video to USB drive • AVI recording format • FTP server

RADIO

Intempo Rebel

An FM radio that edits and records tracks to MP3



In some ways, the Rebel from Intempo resembles a conventional FM radio. However, it also comes with built-in memory that allows it to record around 40 songs and convert them into MP3 files you can then transfer onto a portable music player, such as an iPod.

The Popcatcher software built into the Rebel can even filter out DJ chat, adverts and jingles so you end up with a batch of neatly recorded MP3 files. There's a USB port on the top of the unit, along with a set of memory card slots (SD/MMC cards and Memory Sticks can be used), which let you quickly transfer all

your recorded songs to a PC, iPod or other media player.

The basic idea is pretty clever, but we found that the Intempo Rebel isn't as easy to use as it could be. Things get off to a bad start since it takes a whopping 12 hours (sometimes more) for it to learn how to record individual radio stations, so if you like to hop from station to station you could end up waiting days

for the Rebel to set itself up properly.

What's more, the user doesn't have much control over the Popcatcher software. The problem is that it records songs automatically rather than allowing you to record specific songs at certain times. We also found that the process of transferring recorded songs onto our iPod wasn't particularly intuitive.

The idea behind Intempo's Rebel is interesting, but we feel its designers need to work on the device's ease of use. If you're in the market for a device like this, you may want to consider Avanquest's Radiotracker (www.pcw.co.uk/2212601), a software alternative that saves internet radio to a PC and is much easier, and quicker, to use. *Cliff Joseph*

Verdict

Pros Good-quality radio; basic MP3 recording works well

Cons Long setup times; complicated transfer process; little control over recordings

Overall A clever idea that's marred by poor usability

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £70

Contact Intempo 0161 828 5219 www.intempodigital.com

Specifications FM receiver • SD/MMC. Memory Stick card slots • USB • Line-in • Headphone jack • External AC adapter • 195x70x80mm (wxdxh) • 1kg

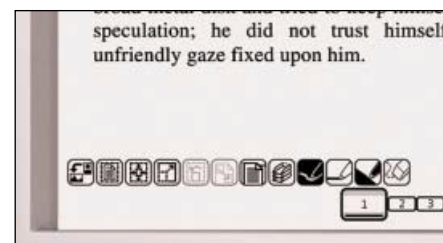
EBOOK READER

Irex Iliad Book Edition

This reader has an interactive epaper screen – but don't throw out your bookshelves just yet



The Iliad's screen icons can be sluggish to navigate



Book publishers have so far escaped the kind of disruption IT caused to the music and film industries, and most seem to believe this will continue. Even bookseller Borders, which sells this Iliad ebook reader, believes it will not dent print sales.

Yet traditional publishers cannot afford to be complacent. Print-to-order publication is becoming popular and technology capable of presenting a serious challenge to the printed book is gradually coming together. Truly affordable portable computers are becoming available for the first time, but they're hard on the eyes for prolonged reading and their battery life is limited. The Irex Iliad Book Edition is one of a number of new devices to address these limitations.

Its 8.1in 7,658x1,024-pixel epaper screen, which combines technologies from both Philips and US company E-Ink, is easier to use for prolonged reading than an LCD, but the nearest it gets to white is a light cardboard colour. This is not unpleasant, but makes for poor contrast, so you need to be in good light to read it.

On the other hand, it needs no backlight and so uses relatively little power. Irex's estimate of a 15-hour battery life may be optimistic, but it will easily stand a full day's use. The screen supports 16 shades of grey, but no colour.

The Iliad screen differs from similar ones on rival ebooks, such as the Sony Reader and Amazon Kindle, in having a stylus-driven digitiser layer from Wacom, which allows you to use it for navigation and handwritten notes. This is where its difference from paper is most marked – it's not easy to write on and deletions often leave marks that disappear only when loading a new page.

Navigation using screen icons is sluggish and only slightly less so when you use the physical controls, so the Iliad seems a little underpowered. Boot-up takes

35 to 40 seconds, which is a long time for a device attempting to rival the convenience of a book.

Measuring 21.7x19.5x1.6cm, the Iliad is slimmer, but slightly wider, than a paperback with a rather austere aluminium-look casing. Along the top edge are slots for SD and Compact Flash cards, a USB port for linking to a PC, as well as a stylus slot. The bottom edge holds an audio jack (there are internal stereo speakers), an on-off switch and a multi-pin port into which you plug in the combined power and Ethernet lead.

Other controls are ranged round the screen. A button at the top-right takes you to the Irex download site, where you get free companion software for your PC, as well as ebooks for reading. This Book Edition includes 50 pre-loaded classic books, although these are all freely available titles.

Four buttons at the bottom of the screen provide quick access to stored newspapers, books, documents and the notebook utility. Left of the screen are up, down and select buttons, a scroll bar for turning pages, a menu button and a button for going up a menu level.

The Iliad works best with pages that are tailored for the screen. Reading an untailored PDF manual was very awkward: we had to zoom in to read the type, and when we got to bottom right of one two-column page, it was hard to navigate to the top left the next one.

The Iliad has the feel of a prototype, rather than a finished product. Nevertheless, it may interest people who travel a lot as it will allow them to carry a virtually limitless number of books and read them fairly comfortably. The screen, although impressive, shows that epaper has a long way to go if it is to rival the real thing, but there is no reason to suppose that it won't do so.

Clive Akass

Verdict

Pros Usable in good light and with tailored formatting; long battery life

Cons Sluggish; clumsy interface

Overall One for early adopters and it could find niche markets – most interesting as a pointer to the future

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £399

Contact Borders 020 7379 7313
www.borders.co.uk

Specifications 400MHz Xscale processor • 8.1in (768x1,024) • 160ppi • 64MB Ram • 256MB internal flash (128MB usable) • USB • MMC and Compact Flash reader • Stereo speakers • Ethernet port • Supports PDF, HTML, TXT, JPG, BMP, PNG, PRC • 15.5x1.6x21.7cm (wxdxh) • 435g

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LEXMARK™

MP3 SUNGLASSES

Oakley Split Thump

A pair of MP3 player glasses that actually look the part



Oakley's Split Thump sunglasses are another attempt to combine technology with eyewear – in this case, a digital music player. It's certainly a stylish offering and comes with a set of earphones that adopt a double-hinged design and clip into the bottom of the glasses when in use. This offers the advantage of allowing them to look just like a normal pair of shades when you want them to, and the design of the arms is such that they can fit very snugly into your ears with no danger of falling out.

The Oakley logos on the side of the frame double up as audio controls; volume is found on the left arm, and play controls on the right. Various button presses can enable functions such as the graphics equaliser,

shuffle settings and a range of shortcuts that help when browsing large collections.

There's good format support, too, including MP3, M4A and DRM-encoded WMA files. Music can be copied using drag-and-drop by plugging the device into a computer via the mini-USB connection that's hidden under the right arm.

We were very impressed by the sound quality of the glasses, and it's certainly loud enough to be heard when you're out and about. You can expect up to seven hours' playback from a full charge, and you're given both visual (via a tiny LED) and audible warnings when the power's getting low.

The glasses are available in both 1GB and 2GB capacities. And while they're not cheap, you should bear in mind that you're paying for a decent pair of designer sunglasses at the same time.

We've never been particularly impressed by these sorts of devices before, due to their often chunky and rather unstylish designs. However, thanks to some very clever design decisions, this is the first pair of shades we've tried that we'd genuinely be happy to wear out and about.

Paul Lester

Verdict

Pros Very stylish; compact design; good control over your music; impressive performance

Cons 2GB version is expensive

Overall Oakley has produced the first pair of tech-oriented eyewear we'd be happy to wear, and the performance of the player is just as impressive as the design

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £164.99 (1GB); £235 (2GB)

Contact In Eyewear 0844 804 4146
www.ineyewear.com

Specifications 1GB/2GB capacity

- Up to seven hours' playback
- 100 per cent UV protection
- Mini-USB2 interface
- Format support: AAC, MP3, WMA, WMA DRM 9, Audible, WAV

DIGITAL CAMCORDER

Toshiba Camileo Pro HD

A lightweight and affordable high-definition camcorder



Toshiba's HD DVD format may have bitten the dust, but the company hasn't given up the ghost on other high-definition products. It recently launched a range of HD camcorders, including the Camileo Pro HD, which it claims is one of the smallest.

It's certainly impressive to see an HD camcorder squeezed into such a compact design – even if the resolution is 1,280x720, rather than the full HD resolution of 1,920x1,080. The Camileo measures 12cm high, 6cm deep and 2.5cm thick, and weighs a mere

200g, so it's easy to just slip it into your pocket until you're ready to start shooting.

Video quality is very good – as you'd expect with that resolution – although you'll need steady hands to get the best results, especially when using the 3x optical zoom. As well as shooting video, the Camileo can act as a five-megapixel still camera and an MP3 player, and can even be used for recording voice notes, so it's really quite versatile for such an inexpensive device. Video is captured in MP4 format, but all the software you need to capture and play MP4 files on your PC is supplied with the Camileo, including a copy of Nero Essentials.

The only minor drawback is that you'll need to provide your own SD memory card. The Camileo has just 128MB of built-in memory, which will barely store three and a half minutes of HD video. Toshiba claims a 1GB memory card will store about 30 minutes of HD video (or 72 minutes of standard DVD-resolution video), but you can get a 2GB card for less than £10 these days, so that's not a major problem.

Serious video buffs might prefer something more robust, and with full HD resolution, but the Camileo is a good, affordable option for quickly shooting high-quality video clips of family and friends.

Cliff Joseph

Verdict

Pros Compact; lightweight; HD recording

Cons The 1,280x720 resolution isn't full HD; meagre 128MB of built-in memory

Overall It's not a top-quality HD camcorder, but the Camileo's compact design makes it ideal for casual use

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £139.99

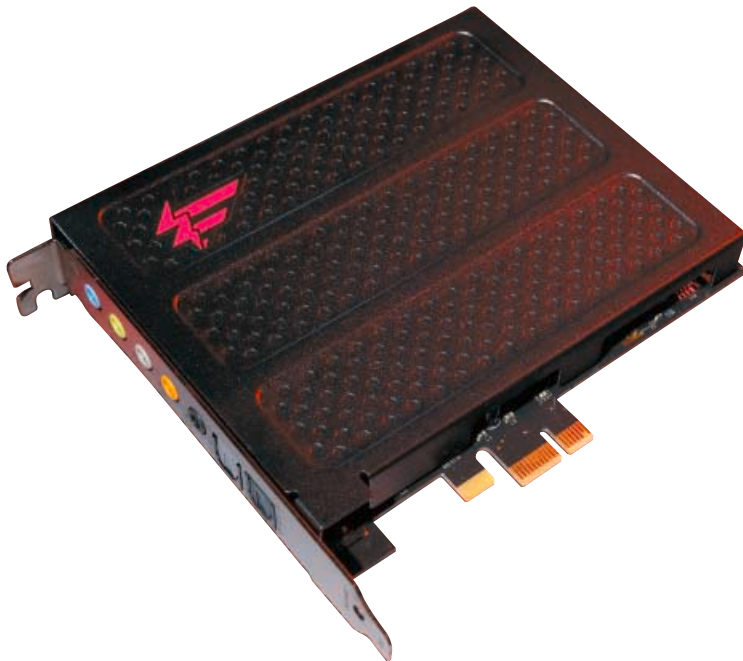
Contact Toshiba 0870 444 8944
www.toshiba.co.uk

Specifications 1,280x720 resolution HD camcorder • five-megapixel camera • Built-in speaker and microphone for voice recording • MP3 playback • Li-ion rechargeable battery (maximum two hours' recording time) • 128MB memory • USB • SD-card slot

SOUNDCARD

Creative X-Fi Titanium Fatal1ty

This Soundblaster PCI Express card is designed specifically for gamers



The Fatal1ty's has four mini-jack line outputs, one of which is also a headphone jack



Although the latest gaming PCs are fitted with faster PCI Express card slots, most soundcards are still designed to be plugged into older, slower PCI slots. This is where the Soundblaster X-Fi Titanium Fatal1ty comes in. It's a x1 PCI Express card (it also works in x4 and x16 slots), so it can take advantage of the faster transfer speed.

Due to its metal shielding jacket, the card looks quite different from others on the market. This helps shield the circuitry from interference caused by noisy components inside your PC. Despite the addition of the shielding jacket, the card is still very easy to fit in a PC.

The card is designed for 7.1 surround sound, so has four mini-jack line outputs, the first of which doubles as the headphone jack. You also get a stereo microphone socket and optical digital audio inputs and outputs.

The usual Soundblaster software pack is provided, including Creative's Mediasource for managing media and PowerDVD for playing movies – the latter must be downloaded. You also have to register the card if you want to use the Dolby Live mode.

As with all X-Fi models, the Titanium Fatal1ty's software control panel allows you to switch between three modes: content creation, entertainment and games. The content creation mode activates the card's ASIO (audio stream input/output) drivers and tweaks the card's settings for low-latency performance in audio software, such as Cubase and Reason. The entertainment mode is designed for listening to music and Dolby Digital EX and DTS surround-sound support in movies. In this mode, you can also use the card's Crystalizer effect, which does a good job of adding oomph to compressed music tracks, and the CMSS 3D effect, which introduces a bit of extra width and depth to music and soundtracks.

The main attraction of the Titanium Fatal1ty, though, is the gaming mode. Creative's cards have a reputation for excellent gaming surround-sound support and this one is no different. It has support for full Eax 5.0 HD and OpenAL, plus there's 64MB of fast X-Ram to help speed up game performance.

But the Titanium Fatal1ty also has another trick up its sleeve. As well as outputting surround sound over the analogue outputs, it can encode gaming surround sound into Dolby Digital Live so that you can output it via the optical digital output. This means you can connect the card to a surround-sound receiver via a signal optical cable, rather than hooking up lots of analogue cables.

In terms of performance, the card is very impressive. Games such as Bioshock and Mass Effect sound top class, with the card delivering precise surround-sound positioning and crystal clear audio quality. Add to that the excellent sound quality across all the different modes produced by its pristine 24-bit, 96KHz audio playback on all outputs, and you've got a seriously good soundcard.

However, there is a downside to the Titanium Fatal1ty – its price. As with many of Creative's cards, you're paying a significant price premium for the Soundblaster badge. Whereas a similar offering, such as the Asus Xonar DX PCI-E, costs just £70, the Titanium Fatal1ty clocks in at nearly double that. To be fair, the Xonar has to emulate Eax 5.0 in software and doesn't produce quite as precise surround-sound results, but it's still a significant price difference.

Nevertheless, if you're serious about surround sound in games and don't mind paying the price premium, then you'll find the Titanium Fatal1ty provides stunning performance for music, movies and especially gaming.

Niall Magennis

Verdict

Pros Brilliant performance in games; great overall sound quality; good sound enhancement options

Cons Very expensive

Overall The Titanium Fatal1ty is a great performer in games, but it's very expensive in comparison to rival gaming cards

Features	★★★★★
Performance	★★★★★
Value for money	★★★☆☆

Overall	★★★★★
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Price £120

Contact Creative 0800 376 7954

<http://uk.europe.creative.com>

Specifications

Playback: Stereo/Surround

24-bit/96KHz

Recording: Stereo 24-bit/96KHz

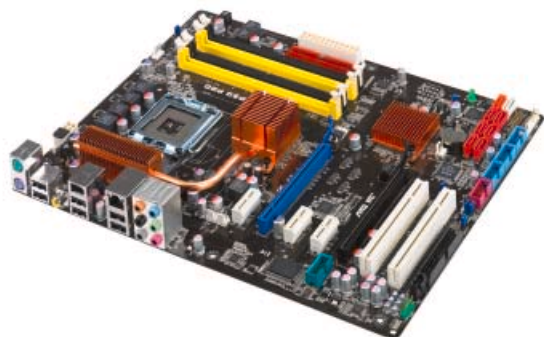
Inputs: Microphone, optical

Outputs: Four line-out, optical out

MOTHERBOARD

Asus P5Q Pro

A board with Intel's latest chipset and plenty of overclocking potential



The P5Q Pro is built around Intel's new mainstream chipset, the P45 Express. This chipset supports bus speeds up to 1,333MHz and both DDR3 and DDR2 memory; with DDR2 memory, 4GB modules are now supported, which means you could install up to 16GB.

For the P5Q Pro, Asus has combined the P45 with the 'R' version of the new ICH10 Southbridge – this means it supports Raid.

Both bridges and the MOSFETS are passively cooled. As with many motherboards, the P5Q Pro uses Japanese-made conductive polymer capacitors, which

offer longer life expectancies and lower power loss compared to standard versions.

Asus has gone down the DDR2 route with the P5Q Pro, with the four slots supporting 1,600, 1,333, 1,066 and 800MHz memory modules. Two x16 PCI Express graphics slots are provided, but if you want to use these for a dual-graphics Crossfire setup they'll only run at x8. The rest of the expansion slots comprise two standard PCI slots and three x1 PCI Express versions.

The board provides eight 3Gbits/sec SATA ports, six of which are controlled by the ICH10R southbridge while the other two are left to a Silicon Image chip.

Asus hasn't skimped on the overclocking features in the Bios. In fact, its extensive list of adjustments would shame many a high-end board.

The board also features the latest version of Asus' power-saving technology, its EPU-6 Engine. It intelligently detects and adjusts the power being supplied to the board depending on exactly how the system is being used. It also comes with Express Gate, an Asus technology that offers an optional Linux OS boot-up.

At this price, you're getting a lot for your money and the Asus P5Q Pro's overclocking abilities will appeal to enthusiasts.

Simon Crisp



Verdict

Pros Good stable board with a great range of overclocking options

Cons Chipset doesn't support full speed x16 in Crossfire mode

Overall Considering the price you get an awful lot of motherboard for your money

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £95.16

Contact Asus 020 7631 2020
www.asus.com

Specifications ATX format • Intel Socket 775 • Intel P45 Express/ICH10R • 1,333/1,066/800MHz FSB • Four DDR2 Dimm slots • Two x16 PCI Express slots • Eight SATA slots • Gigabit Lan

GRAPHICS CARD

Sapphire HD4850

Fast and cheap, this new card presents some serious competition for Nvidia



Featuring the new RV770 GPU, the HD4800 series of graphics cards from AMD will initially comprise two models: the HD4850 and HD4870.

The HD4850 is aimed at the mainstream market, with a price of £125, while the faster-clocked HD4870 should retail for about £180. The latter will compete with the overclocked Nvidia GeForce 9800GTX and GTX260.

At first glance the HD4850 looks very much like the standard models of the Radeon HD3850. It has a single-slot cooling design with the huge copper heatsink covering most of the printed circuit board. However, on closer inspection the card is slightly bigger than the standard Radeon HD3870 with an

upgraded cooler and beefier heatsinks on the power components. The board will draw a maximum of 110W using a single six-pin PCI Express power connector.

The RV770 GPU is built using a 55nm process and, even with a die size of just 260mm, it still manages to pack in a staggering 956 million transistors. The new architecture more than doubles the number of stream processors of the HD3800 (800 for the HD4800 series compared to the 320 of the HD3800 series) and has 40 texture units.

At 625MHz the HD4850's core clock is slower than the HD3850's at 625MHz, but the memory clock is 170MHz faster at 1,000MHz (2,000MHz effective) compared to 830MHz for the HD3850. The standard reference design comes with 512MB of GDDR3 onboard running through a redesigned 256-bit memory bus.

In our tests, the HD4850 clocked up a score of 15,195 in 3Dmark05, while the more demanding 3Dmark06 returned a score of 10,221. These impressive scores, combined with the card's relatively low price, make it an enticing option and Nvidia certainly has some strong competition to contend with.

Simon Crisp



Verdict

Pros Fast; cheap; single-slot design

Cons It gets rather hot with use

Overall Despite its low price, the HD4850 performs extremely well

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £125

Contact Sapphire
www.sapphiretech.com

Specifications 625MHz core clock • 1,000MHz memory clock (2,000MHz effective) • 800 stream processors • Two dual-link DVI spots • S-video • HDMI (via included adapter) • Crossfire and Quadfire compatible



Griffin Evolve

Price £250 **Contact** www.griffintechology.com **Overall** ★★★★★

This speaker set is an iPod dock with a difference. Instead of the two speakers being fixed to the dock, they can be lifted out and carried around separately. They're battery powered (the dock charges them when attached), and we were able to get around 15m away with no problems during testing.

The device is easy to set up and use (you can also plug in non-iPod players), and overall sound quality is impressive, with good deep bass from the relatively small speakers. High notes are not lost in the mix and the set is capable of volumes high enough for even big rooms.

Anthony Dhanendran

Overall Expensive, but good for simple multi-room listening

Toshiba G450

Price From free (depending on contract) **Contact** www.toshiba.co.uk
Overall ★★★★★

Mobile broadband is booming and commuters across the country are plugging 3G USB modems into their laptops while on the train. Most modems are simple button-free devices, but Toshiba's HSDPA G450 has a numerical keypad and miniature display, allowing it to double up as a mobile phone.

Features are very limited (you can call or send a text) and the small screen, combined with the two circular keypads, makes it hard to navigate. But we like the idea of adding simple phone functionality to an HSPDA modem, and it will also play your MP3s.

Will Stapley

Overall Limited phone functionality, but it's a nice idea



In-win B2 Stealth Bomber

Price £91.65 **Contact** www.in-win.com.tw **Overall** ★★★★★

A case designed in the style of America's controversial B2 bomber might not get everyone's approval, but this model from In-win will definitely stand out from the crowd.

The stealth theme starts at the dark charcoal finish and continues through to the vent outlet on the side panel, which resembles the B2's wing platform. And with its pale grey pin-striping, even the motorised front panel looks like an access panel on the actual B2 aircraft. The tool-free case comes pre-drilled for water-cooling, has a 120mm fan on the rear panel and two 80mm fans in a dropdown panel that sits above the expansion plates.

Simon Crisp

Overall A truly eye-catching case

Avermedia Hybrid STB 1080i

Price £129.99 **Contact** www.mediaatlantic.com **Overall** ★★★★★

The STB 1080i digital set-top box sits between your PC and monitor and, at the flick of a button, outputs Freeview or analogue TV to your monitor. It can bypass your PC output entirely. Alternatively, a channel can be watched using picture-in-picture mode.

It looks just like its STB9 predecessor, with the same menu interface and remote control, but it adds support for 1080i content over its component connectors, so you can connect an Xbox 360 and play in high definition on your monitor. TV is output at a bizarre 1,024x768 resolution and the picture is rather noisy with some noticeable artefacts. The price is high, but the set-top box is easy to use.

Emil Larsen

Overall Makes your monitor more useful, but the quality isn't great





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Soundblaster X-Fi Xtreme Gamer
700W Quiet Quad Rail PSU
ASUS Silent Knight II Ultra Cooler
Silver Aluminium Trigon Case
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* Prices subject to change.



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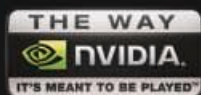
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Genuine Windows Vista® Home Premium
2GB CORSAIR® DDR2-667Mhz Memory
160GB Serial ATA II Hard Drive (5,400rpm)
8x DVD R/RW/Dual Layer (+24x CD-RW)
512MB nVidia GeForce 8600GT
4 USB Ports & 1 FireWire Port
Onboard 2.1 High Definition Audio
Internal 3 in 1 Memory Card Reader
Integrated 56k Modem
Onboard 10/100 LAN Port
Integrated Wireless 802.11G Network Card
Integrated Keyboard, Touchpad, Speakers
Integrated 2.0 Megapixel Webcam
9 Cell Lithium Ion Battery
1 yr RTB Warranty Inc Free Collect & Return



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£549.00 inc VAT & Delivery*

Intel® Core™2 Duo E4600 (2 X 2.40GHz)
Genuine Windows Vista® Home Premium
2GB CORSAIR® DDR2-667Mhz Memory
ASUS® P5N-MX Motherboard
250GB Serial ATA II Hard Drive (7,200rpm)
20x Dual Layer DVD RW + Lightscribe
512MB GeForce 8500GT Graphics Card
Digital TV Card (Dual Tuner)
6 Channel High Definition Audio (5.1)
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PC Essentials

Our pick of the latest components and accessories



A-DATA Vitesta DDR2-800X Extreme Edition
£41.10

www.adata-group.com/en

Overall: ★★★★★

This 2GB memory kit features two matched 1GB modules of PC2-6400 DDR2 running at 800MHz using Micron chips. The Vitesta modules come with faster latency timings (4-4-4-12) than standard DDR2 800 (5-5-5-18), as well as a lifetime warranty. The kit also comes with recommended timings for overclocking, making it ideal for high-performance PCs.

Akasa Libra

£18.95

www.akasa.co.uk

Overall: ★★★★★

Designed to hold notebooks with screens up to 15.4in, the Akasa Libra is a stylish and effective cooler. The top panel is made from aluminium (the cooler is also available in black), while two built-in low-noise fans provide the air flow. Two USB ports are included – one hooks up to your notebook to power the fans, while the other can be used for any USB device.



OCZ Freeze Extreme

£4.69

www.ocztechnology.com

Overall: ★★★★★

Often overlooked, good thermal paste can be the difference between a stable overclocked system and one that keeps falling over. OCZ's Freeze Extreme paste is a mix of thermally conductive ingredients that increases contact between CPU and cooler by filling in the tiny gaps and pits that are sometimes present but not visible.



Antec Three Hundred

Price: £40.54

www.yoyotech.co.uk

Overall: ★★★★★

The smaller sibling of Antec's massive Hundred gaming case, the Three Hundred is ideal if you're on a tight budget but still want a quality chassis. It comes with two fans installed (120mm on the rear, 140mm on the roof), but there are mounts for three additional 120mm fans. You also get six 3.5in and three 5.25in drive bays. A classy, but cheap case.



Samsung SH-S223F
£17.61

www.samsung.co.uk

Overall: ★★★★★

The Samsung SH-S223F DVD writer doesn't hang about when it comes to burning discs. It can write DVD +/-R discs at 22-speed, DVD+R dual-layer at 16-speed, and 12-speed for DVD-R dual-layer and DVD-Ram. Rewritable discs can be burnt at eight-speed for DVD+RW and six-speed for DVD-RW. It also reads a standard DVD at 16-speed. If you don't have a need for Blu-ray, this fast and inexpensive drive is an excellent choice.



Imation Atom

£12.90

www.imation.com

Overall: ★★★★★

There seems to be a competition among manufacturers to develop the smallest Flash drive, and it's one Imation appears to be winning with the Atom, which measures just 12mm wide and 32mm long. The 1GB drive is so small and light that a strap is included to make sure you don't lose it. Encryption software comes preloaded.



Case Logic PHDC-1

£14.99

Path Group 01844 219 000

Overall: ★★★★★

This rugged case is designed specifically for carrying 3.5in hard disks. It's not waterproof and there's no padding, but the hard shell will prevent damage caused by the occasional knock. An elastic strap inside the case keeps the hard disk in place, while a small pouch allows you to store USB cables. The case is available in blue, black and red.



Akasa AK-966BL Blue Aurora

£25 approx

www.akasa.co.uk

Overall: ★★★★★

The Akasa AK-966BL is the latest high-performance CPU cooling fan for Intel Socket 775 CPUs, including the Core 2 Extreme. Due to its 120mm cooling fan, it won't be suitable for cases where internal space is limited, but it does mean it has a slow spin speed (500 to 1,700rpm). Four extra-long copper heatpipes running from the copper base into the aluminium cooling block helps to quickly dissipate heat.



VIDEO EDITING

Cyberlink Powerdirector 7 Ultra



A welcome upgrade for this easy-to-use video-editing program



Powerdirector's Magic Clean tool automatically adjusts lighting and colour settings for any photo or video clip

Powerdirector's strong point has always been its ease of use. It might not have the sheer power of rivals such as Adobe's Premiere Elements, but it's a lot easier for newcomers to master, while still providing a range of editing tools and special effects powerful enough to produce sophisticated video projects. For the most part, the program continues that tradition with this latest upgrade, although it does stumble along the way occasionally.

For newcomers to video editing, Powerdirector 7 includes a number of 'Magic' commands to help you get started. In addition to the existing Magic Movie command that automatically compiles a series of clips and transitions into a complete movie, there are options such as Magic Clean, Magic Fix and Magic Motion.

Magic Clean automatically adjusts lighting and colour settings for any photo or video clip, and provides a useful split-screen preview so you can see the 'before and after' versions of your video alongside each other. Magic Fix allows you to adjust the focus of a photograph, remove red-eye or stabilise shaky video clips taken with a handheld camcorder. Finally, Magic Motion can be used to instantly apply pan and zoom effects to photos that are used as part of a slideshow, or perhaps in the title sequence for a movie project. In addition to its predefined pan and zoom settings, the Magic Motion dialogue box also includes a Motion Designer option that allows you to create your own animation paths to control how an image moves around the screen, so you can exercise as much control over the animation process as you want.

There is improved control over the various special effects filters too, as these now include keyframe controls that allow you to modify effects across a series

of frames. So instead of simply applying a sepia filter to an entire video clip, you might make the effect fade in over several seconds instead.

If you really want to go to town with these sorts of effects, you can experiment with the improved PiP (picture-in-picture) controls. Like most video-editing programs, Powerdirector has a Timeline window that is split into a series of horizontal tracks, with elements such as audio clips, video clips and special effects each placed into their own separate tracks. You can also add up to six different PiP tracks to your project, which means you can create complex montages with multiple images and video clips superimposed over each other as they move around the screen. This is where things get a little more complicated, though, and we could have used a bit more help from the manual and online help files, both of which have tendency to simply list features without really explaining how they work.

The upgrade is rounded off with a few 'me too' features that bring it up to date with the latest video technologies. This Ultra version of the program allows you to import the AVCHD format used by many new high-definition camcorders and to burn video projects onto Blu-ray disc (there's a less expensive Deluxe version that omits these features, priced at £39.99). You can upload your edited videos straight to Youtube, and we also like the ability download photos and audio clips from Flickr and Freesound straight to your projects.

We'd like to see the manual and online help files improved so that they explain some of the program's advanced features more clearly. However, we still like Powerdirector's overall ease of use and would certainly recommend it to people who are just getting started with video editing.

Cliff Joseph

Verdict

Pros Includes useful 'magic' tools that simplify the editing process for beginners

Cons Poor documentation and online help

Overall There are more powerful video editors available, but Powerdirector's ease of use will appeal to newcomers

Features ★★★★★

Ease of use ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £59.95

Contact Cyberlink
www.cyberlink.co.uk

System requirements 2GHz
Pentium Core 2 Duo • 512MB Ram
(2GB for HD) • 10GB hard disk (60GB
for HD) • Windows XP/Vista

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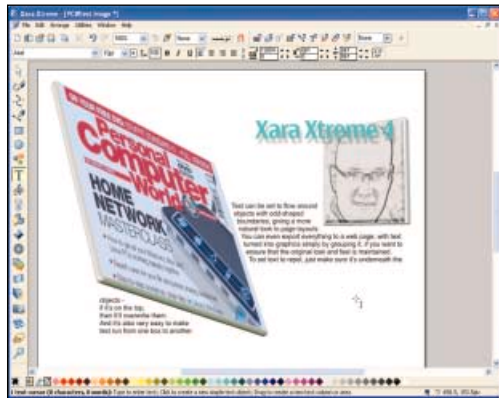


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GRAPHICS SOFTWARE

Xara Xtreme 4

Create logos, websites and more with this fast program



This latest version of Xara's Xtreme graphics software builds on a solid foundation, adding some extra features while still remaining very responsive. There are two versions, with the Pro (£127) including features such as support for Microsoft's XPS format, Pantone colours and multi-core processing.

Both versions are fast and come with nifty new features. For example, you can drag the image in our screenshot around in real time, turn it through 180° and you'll see the mirror image on the back. There's also a

full photo editor, with tools for tweaks such as red-eye removal and support for panoramic photos.

Another new add-on is the ability to create HTML pages directly from your design. You can add links to objects on the page, and use the naming functions to fill in extra attributes. Layers can be translated to mouse-over movements, too.

And you're not stuck with just basic web fonts – if you want a headline to look just as it does in Xtreme, just group it and it'll be exported as a graphic instead of HTML text. It's not perfect, but it does mean you can make a great-looking page with rollovers or pop-ups very easily, and no Javascript expertise.

One criticism is that the interface is becoming a little fiddly, with the tools down the left and the options for them at the top of the screen, as well as a toolbar that changes depending on which tool is selected. Some users will prefer the expanding and collapsing palettes found in, say, Dreamweaver.

However, Xara Xtreme remains an extremely capable package, and it really is amazingly fast, with live previews of just about everything. Whether you want to create logos, marketing leaflets or even a graphics-intensive website, Xtreme is a tool you really should have in your armoury. *Nigel Whitfield*

Verdict

Pros Very easy to use; HTML export functionality; fast live preview

Cons CMYK support and some other features only in Pro version; toolbars can take some getting used to

Overall A great graphics package for all levels of user

Features ★★★★★

Ease of use ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price \$89 (approx £45)

Contact Xara 01442 350 000

www.xara.com/uk

System requirements Pentium processor • 128MB Ram • 100MB disk space • Windows 2000/XP/Vista

INTERNET SEARCH APPLICATION

Ergo

Enhance your online searches by categorising and previewing results



Search engines have become such a core part of our daily lives that Google often gets transformed into a verb. However, the results you get from search engines aren't always terribly helpful – you generally just get a long list of web links that may or may not provide the information you need.

Ergo is a program that attempts to make better sense of your search results by organising them into categories that help you to quickly home in on the most relevant links.

When you run Ergo, it displays a blank screen with a simple text field at the bottom, into which you type the text for your search. You can choose to use multiple search engines, including Google and Yahoo, as well as other sites such as Flickr, Youtube or Wikipedia. Once Ergo has performed a search, it then organises the results into categories that are displayed on screen as a kind of flowchart.

If, for instance, you do a search on 'Apple', the results might be organised into categories relating to Apple computers, apple recipes or singer Fiona Apple. If you then click on one of these categories, Ergo switches to a preview mode that displays visual previews of the web pages in that category (similar to the way Apple's iTunes displays album artwork).

It's a clever idea and does help to quickly sort the wheat from the chaff when you're searching for things on the internet. The question is whether you're prepared to pay almost £30 simply to fine-tune your searching. People who perform searches as part of their daily work might feel Ergo pays for itself in improved productivity, but ordinary home users will probably be content with conventional searches on Google and its rivals. If you want to try it out for yourself, there's a one-month free trial available. *Cliff Joseph*

Verdict

Pros Use multiple search engines simultaneously; ability to include sites such as Youtube

Cons Unlike conventional search engines, Ergo isn't free

Overall A useful tool for people who need to use search engines a lot, but expensive for ordinary home users

Features ★★★★★

Ease of use ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £24.99

Contact Ergo

www.ergodownload.com

System requirements 1GHz processor • 1GB Ram • Windows XP/Vista

ADVENTURE GAME

Sherlock Holmes: Nemesis

An adventure that's anything but elementary



Sherlock Holmes is, in many ways, the perfect character for a point-and-click adventure game; clue hunting, crime solving and general sleuthing all work well within the style of the genre.

Less familiar is the character of Arsène Lupin, a Raffles-like French gentleman thief and literary contemporary of Holmes. Lupin is the nemesis of the title and he has a history of run-ins with Holmes, who made several guest appearances in the original Lupin stories by French author Maurice Leblanc.

The premise for Nemesis is that Lupin, having decided that the arrogant British need to be taught a lesson, starts a series of robberies, each involving a national treasure.

Unable to resist the temptation to go head-to-head with the greatest investigative mind in the world, Lupin sends a cryptic message to 221b Baker Street, goading his rival into a battle of wits that sees the player as Holmes (and, occasionally, Doctor Watson or Inspector Lestrade) attempting to foil the thief at every turn.

It's a fun premise and one that's executed in an engaging manner. Unusually for a point-and-click adventure, the action all takes place in a 3D first-person point of view, which helps make the game more involving.

Ironically, what lets the game down is its lack of attention to detail. Environments are beautifully designed, if a little sparsely populated. The voice acting, on the other hand, will have you wincing, while the frequent misspellings and grammatical errors in the on-screen text are unforgivable.

Despite these flaws, it can be satisfying to unravel the twisting plot, although the inconsistent difficulty levels of the puzzles make the game an strangely uneven and occasionally confounding experience. *Jonathan Parkyn*

Verdict

Overall Not the most well thought-out game, but it does have its moments

Overall ★★★★★

Price £30

Contact Focus

www.sherlockholmes-thegame.com

System requirements 1.3GHz processor • 512MB Ram • 64MB DirectX 9 graphics card • 3GB hard disk space • Windows XP/Vista

SIMULATOR

Hurricane

Take to the skies in a classic WWII fighter



The Hurricane is a classic fighter aircraft and, without doubt, one of the most recognisable British aircraft both in form and in the unmistakable sound of its Merlin engine. The closest most of us are ever likely to get to flying one is with a simulator, which is where this add-on for Microsoft's Flight Simulator versions X and 2004 comes in (you need one or the other in order to use Hurricane).

Installation was simple and the CD is not required again. There's little information included about the

Hurricane itself. Some basic information is included in the manual, but none of the crucial details, such as the speed at which the plane is likely to stall, which comes in handy when trying to land the plane.

Things improved once we started Flight Simulator X. The visual representation of the Hurricane is excellent, with moving parts on the radiator and, of course, the landing gear.

The way the pilot's head turns as the joystick is moved from left to right is a nice touch. And the roar of the Merlin engine during gameplay sounds just like the real thing.

Several models of the Hurricane are included, along with colour schemes from the RAF, Russia and, oddly, Germany (apparently one Hurricane Mk1 was captured and used in German aircraft trials).

Missions, which were new to Flight Simulator X, are under-represented here: there is only one included and it is something of a disappointment, simply simulating an engine failure that takes place very soon after take-off.

Aside from that disappointment, Hurricane is a good choice for vintage plane fans, particularly those who already have a copy of Microsoft Flight Simulator at home. *Tim Smith*

Verdict

Overall A great Flight Simulator add-on for fans of classic planes

Overall ★★★★★

Price £19.99

Contact First Class Simulations

01869 338 428

www.contact-simulations.com

System requirements Microsoft Flight Simulator 2004/X • 1GHz processor • 512MB Ram • 14GB hard disk space (for Flight Simulator install) • DVD-Rom • Windows XP/Vista

Cyberpower recommends Windows Vista™ Home Premium



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www.pcw.co.uk/bestprices). You'll also find the date of the magazine in which the product was first reviewed, along with an alternative suggested product for that category. If the Best Buy entry has a web code listed alongside it, this means you can read the full product review on our website. Simply head online and use the format [www.pcw.co.uk/\[web code\]](http://www.pcw.co.uk/[web code]) – for example, www.pcw.co.uk/2208243.

Each Best Buy product has gone through our rigorous testing and reviewing procedures, making this your one-stop guide to the best products on the market.

BUDGET PC



Zoostorm 3364-2354

Price: £499

Reviewed: July 2008

www.pcnextday.co.uk

Web code: N/A

This PC comes with a quad-core Intel Q6600 processor, 2GB of Ram, a 250GB hard disk and a 19in TFT. The only downside is the integrated graphics, but with expansion opportunities inside the case, this can be rectified.

HIGH-END PC

Cyberpower Liquid Gamer Infinity SLI

£1,499.30

Reviewed: September 2008

www.cyberpowersystem.co.uk

Web code: N/A

This PC's CPU is overclocked to 4.15GHz and it gives excellent 3D performance thanks to two Geforce 8800GTS graphics cards. The price doesn't include a monitor.



ALTERNATIVE

Chillblast Fusion Sentinel

£699 www.chillblast.com **Web code:** 2211955

A well-built, quiet PC with a quad-core processor, good all-round performance and space inside for future upgrades. It also features a Geforce 8800GT graphics card.

ALTERNATIVE

Ultraviolet Genesis XOC

£4,464.93 www.ultravioletmachines.com **Web code:** N/A

The price may make your eyes water, but it doesn't get much faster than this, with an overclocked QX6850 and two 8800 graphics cards.

BUDGET NOTEBOOK



Fujitsu Siemens Amilo Si 2636

£699

Reviewed: June 2008

www.fujitsu-siemens.com

Web code: 2214093

The Amilo Si 2636 uses Intel's new low-end Penryn Core 2 Duo CPU, the T8100 running at 2.1GHz. Despite this, its Vista performance was snappy and the black-and-red chassis looks great.

HIGH-END NOTEBOOK

Toshiba Satellite P300-172

£1,198.99

Reviewed: September 2008

www.computers.toshiba.co.uk

Web code: N/A

This notebook has a large storage capacity, great CPU performance and it's also a joy to use. The pleasant screen and sleek chassis, along with its quiet and cool operation, makes it a great all-rounder.



ALTERNATIVE

HP Compaq 6715b

£586 www.hp.com **Web code:** N/A

With a 2GHz AMD Turion processor, 2GB of Ram, 160GB hard disk and 15.4in screen, this HP Compaq notebook is great value for money.

ALTERNATIVE

Acer Aspire 8920G

£1,289.99 www.acer.com **Web code:** N/A

Thanks to a recent price drop, this 18.4in notebook is now even better value for money. Highlights include a 2.5GHz processor and Blu-ray drive.

WINDOWS HOME SERVER



Windows Home Server

Fujitsu Siemens Scaleo 1900

Price: £469

Reviewed: July 2008

www.fujitsu-siemens.co.uk

Web code: N/A

It might not be the most attractive piece of kit, but this Windows Home Server from Fujitsu Siemens has good read-and-write performance and useful added extras.

ALTERNATIVE

Belinea 0.center

£386.58 www.belinea.com Web code: N/A

With a striking design and solid performance, the 0.center is a great little Windows Home Server with easy hard disk access and good diagnostic tools.

ULTRA-MOBILE PC

Acer Aspire One

£200

Reviewed: September 2008

www.acer.co.uk

Web code: N/A

This portable notebook combines a decent keyboard, clever storage system and a great design. Its Intel Atom processor runs at 1.6GHz and is backed up by 512MB of Ram. Best of all, it's priced at just £200.



ALTERNATIVE

Asus Eee 901

£319 www.asus.com Web code: N/A

The new Eee's strong point is its battery life. In our tests, it lasted six and a half hours away from the mains, which is a real improvement over the last model.

BUDGET GRAPHICS CARD



Palit GeForce 9600GT 512MB Sonic

Price: £121.32

Reviewed: June 2008

www.palit.biz

Web code: N/A

The G94 GPO used by this card is basically a cut-down version of the G92 8800 and GTS cards, but with fewer, yet faster-clocked, stream processors.

ALTERNATIVE

Asus EAH2400Pro

£32.89 <http://uk.asus.com> Web code: N/A

This card features low power consumption and, although not as fast as the Radeon HD 2400 Pro cards, it's cheap and has some impressive video capabilities.

HIGH-END GRAPHICS CARD

Foxconn FV-N88SMCD2-0N0C

Price: £195

Reviewed: Christmas 2007

www.foxconnchannel.com

Web code: N/A

You're getting a lot for your money with this 320MB card, and the performance difference between this and the more expensive 640MB is slight. It comes with a USB joystick and a two-year warranty.



ALTERNATIVE

EVGA 8800 Ultra Superclocked

£487 www.evga.com Web code: N/A

An expensive choice, but it has excellent power usage and therefore more headroom for overclocking, which it uses to push the core clock speed to 612MHz.

TFT (17-22IN)



Philips 220WS8

Price: £189

Reviewed: February 2008

www.philips.co.uk

Web code: N/A

This 22in TFT screen has superb image quality, is evenly lit and, with a power draw of just 35W, is also extremely efficient. The icing on the cake is Philips' excellent pixel policy. A great buy.

ALTERNATIVE

Viewsonic VX2255

£259 www.viewsoniceurope.com Web code: N/A

The VX2255's clear and excellent pixel policy, along with its multimedia features, mean it is great value at £259, despite the distinctly average image quality.

TFT (24IN+)

Philips 240BW8

£309.95

Reviewed: September 2008

www.consumer.philips.com

Web code: N/A

This 24in screen has a professional feel and is well-suited to any application where you need to be sure that your on-screen colours are accurate. It also comes at a good price and features HDCP support.



ALTERNATIVE

Iiyama B2403WS

£299.60 www.iiyama.co.uk Web code: N/A

The 24in B2403WS from Iiyama offers a good balance of performance and features, and is suitable for a wide range of uses.

PROJECTOR



Panasonic PT-AX200E

Price: £1,099

Reviewed: March 2008

www.panasonic.co.uk

Web code: N/A

Bright enough for general PC use and amazing with movies and games, Panasonic's PT-AX200E HD projector is a wise choice and comes with dual-HDMI inputs along with excellent Game and Cinema presets.

ALTERNATIVE

Benq W500

£704 www.benq.co.uk Web code: N/A

At £700, the Benq W500 is something of a bargain and makes for an ideal entry-level home projector featuring 1080p/24 support.

SAT NAV

Tomtom Go 720

Price: £309

Reviewed: February 2008

www.tomtom.com

Web code: N/A

You're paying a bit more than you might for a number of perfectly capable rivals, but you get so much for your money with the Tomtom Go 720, including a customisable display and great performance on the road.



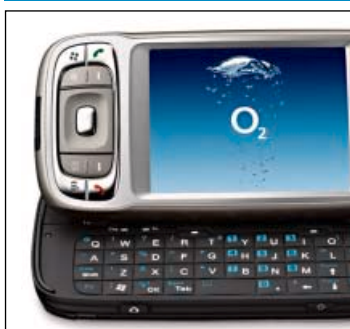
ALTERNATIVE

Mio 620t

£269 www.mio-tech.be Web code: N/A

Mio's new software is impressive and, considering the range of features, it's priced competitively. The maps look great and performance is equally good.

SMARTPHONE



O2 XDA Stellar

Price: £From free

Reviewed: March 2008

www.o2.co.uk

Web code: 2207227

Available on a number of other networks (and Sim-free), this smartphone features a slide-out display, Qwerty keyboard, built-in GPS and Windows Mobile 6. The screen also tilts for easier typing.

ALTERNATIVE

Nokia E51

£ From free www.nokia.co.uk Web code: 2200554

Marketed as a business phone but with Wifi, HSDPA and multimedia tools, such as an FM radio, the Nokia E51 is great for both corporate and home users.

DIGITAL CAMERA

Ricoh R8

£249.99

Reviewed: June 2008

www.ricoh.co.uk

Web code: 2213651

The R8 is simple to use, with a functional design, intuitive mode dial and simplified menu layout. You won't have to search through endless menus as all the key operations are readily available during shooting.



ALTERNATIVE

Pentax Optio A40

£219 www.pentax.co.uk Web code: N/A

This 12-megapixel compact camera houses some great features, not least of which is the excellent image stabiliser. It also shoots great photos.

PORTABLE MEDIA PLAYER



Sony NWZ-A815

Price: £89

Reviewed: January 2008

www.sony.co.uk

Web code: 2203060

It might lack some of the extra features found in other media players, but this Sony model excels in terms of audio quality and is easy to navigate. It also comes with a decent set of headphones.

ALTERNATIVE

Apple iPod Nano

£129 www.apple.com/uk Web code: 2199118

An astonishing design that produces good-quality video and audio. It also benefits from excellent battery life.

MEDIA STREAMER

Archos TV+

Price: £249

Reviewed: May 2008

www.archos.com

Web code: 2210545

With a 250GB hard disk, this device not only streams media across your network, but will also store content for retrieval. It's also a PVR, features a Qwerty remote control and includes optional web browsing.



ALTERNATIVE

Linksys DMA2200

£229 www.linksys.com Web code: 2208886

This Media Center extender will stream movies, music and photos from your PC with the minimum of fuss.

LASER PRINTER



Brother HL-2170W

Price: £149

Reviewed: March 2008

www.brother.co.uk

Web code: 2207225

If you're looking for a good-quality monochrome laser printer for general home use, this Brother model is definitely worth considering. It's fast, compact and even has a wireless adapter. A bargain at this price.

ALTERNATIVE

Lexmark X500n

£301 www.lexmark.co.uk Web code: N/A

An amazingly good-value laser printer, considering it's not only colour but also includes a scanner allowing you to scan, copy and print at speed.

PHOTO PRINTER

Canon Selphy CP750

Price: £110

Reviewed: October 2007

www.canon.co.uk

Web code: 2193769

It's a little bulky when in use, but this dedicated photo printer can produce high-quality prints in less than 70 seconds. And a 2.4in display allows you to perform basic image editing before printing.



ALTERNATIVE

Sony DPP-FP90

£150 www.sony.co.uk Web code: 2196751

It's not particularly cheap to run, but this printer produces high-quality photos from a variety of sources and is reasonably fast as well.

MULTIFUNCTION PRINTER



HP Photosmart C7280

Price: £249

Reviewed: May 2008

www.hp.com/uk

Web code: N/A

Aimed mainly at home office users who need both a fax and great photo printing. Combine this with high-quality printing, scanning and copying and you've an impressive piece of kit on your hands.

ALTERNATIVE

Kodak Easyshare 5500

£199 www.kodak.co.uk Web code: 219926

This multifunction device features decent print, copy and scan functions, but its big draw is its low running costs.

NETWORK-ATTACHED STORAGE

Qnap TS-209

Price: £254

Reviewed: Christmas 2007

www.qnap.com

Web code: 2200223

If you're after a Nas device that does more than just share files over your network, this is it. You can schedule Bit Torrent downloads, stream media to UPnP devices and install your own drives in it.



ALTERNATIVE

Acer Aspire Easystore

£499 www.acer.co.uk Web code: 2206105

This Nas device features 2TB of storage (other sizes are available), along with wireless so you can place it anywhere in your home.

POWERLINE NETWORKING



Solwise NET-PL-200AV Push

Price: £50

Reviewed: March 2008

www.solwise.co.uk

Web code: 2207035

You'll need at least two of these to get your powerline network running, but they're the best around. Based on the Homeplug AV standard, they're fast, resilient to electrical noise and great value for money.

ALTERNATIVE

Devolo Dlan 200 AV

£149 www.devolo.co.uk Web code: N/A

Small and well-designed, these Devolo powerline devices use the Homeplug AV standard and have pre-programmed Quality of Service rules built in.

WIRELESS ROUTER

Linksys WAG325N

Price: £99.99

Reviewed: May 2008

www.linksys.com

Web code: N/A

It might look a little unconventional, but this Draft-N router from Linksys performs extremely well. It also features some sophisticated tools, including VPN support and the option of creating virtual wireless networks.



ALTERNATIVE

Solwise Engenius Wireless-N Gigabit Router

£120 www.solwise.co.uk Web code: n/a

It might be a little pricey, but this router performed well in our tests and comes complete with some advanced network filtering tools.

EXTERNAL HARD DISK



CMS V2ABS-CE-120

Price: £175

Reviewed: Christmas 2007

www.cmsproducts.com

Web code: 2202396

A portable USB2 external hard disk that weighs a mere 150g and comes with built-in 256-bit AES encryption. Inside the case sits a 2.5in 120GB 5,400rpm SATA notebook hard disk.

ALTERNATIVE

Western Digital Mybook Studio

£204 www.westerndigital.com Web code: 2206075

This stylish 1TB external disk comes with USB2, Firewire 800/400 and eSata interfaces for ultimate flexibility.

INTERNAL HARD DISK



Western Digital WD10EACS

Price: £185

Reviewed: January 2008

www.westerndigital.com

Web code: 2203061

This disk features four 250GB platters to provide 1TB of storage. It includes some advanced technology such as Intelliseek, which calculates optimum seek speeds to lower noise, vibration and power usage.

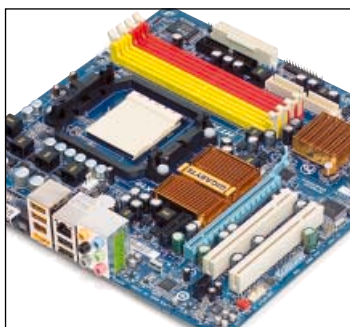
ALTERNATIVE

Toshiba MK2035GSS

£79 www.toshiba.co.uk Web code: 2203064

Weighing just 98g, this 200GB 2.5in SATA hard disk is perfect for increasing the storage capacity of your notebook.

AMD MOTHERBOARD



Gigabyte GA-MA78GM-S2H

Price: £60

Reviewed: June 2008

www.giga-byte.co.uk

Web code: N/A

With a wide range of ports, including eSata, and a good selection of options in the Bios, this is a great AMD board. Finally, after two years of losing to Intel, AMD's engineers have a winner on their hands.

ALTERNATIVE

EQS AB15-RS690MKM

£46 www.eqsc Computers.com Web code: 2204803

The cramped design limits upgrade potential, but it's a keenly priced AMD motherboard that features an on-board HDMI port for HD video.

INTEL MOTHERBOARD



Asus P5E-VM HDMI

Price: £81

Reviewed: June 2008

<http://uk.asus.com>

Web code: N/A

This board has a great range of features. With the integrated graphics enabled, we comfortably overclocked it to 3GHz with our 2.4GHz Core 2 Quad Q6600 attached, so enthusiasts should take note of its capabilities.

ALTERNATIVE

Gigabyte GA-G31MX-S2

£53 www.giga-byte.com Web code: 2202711

Considering the price, you get plenty of features on this Intel board, including Intel's G31 Express chipset and ICH7 Southbridge.

PC CASE



Akasa Eclipse-62 V2

Price: £92.38

Reviewed: May 2008

www.akasa.co.uk

Web code: N/A

It might not have the flashy design of some cases, but with the whole case, including the roof, able to come apart, along with its easily removable motherboard plate, it's an ideal chassis for enthusiasts and modders alike.

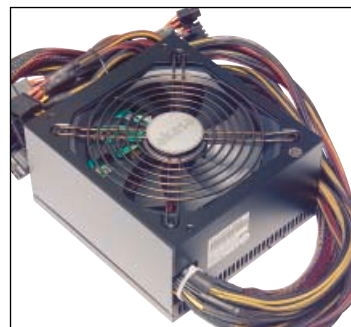
ALTERNATIVE

CoolerMaster Cosmos 1010

£139.83 www.cooler-master.com Web code: n/a

Thanks to its extra-large design, this case not only looks impressive but is also very easy to work on and comes complete with temperature probes.

POWER SUPPLY



Akasa Powermax 1000

Price: £135.11

Reviewed: March 2008

www.akasa.co.uk

Web code: 2207736

This 1,000W power supply has two +12V rails and its single 135mm dual-ball bearing fan makes it a lot quieter than you would expect. It also comes with a variety of power connectors.

ALTERNATIVE

Enermax Galaxy 1000W

£233.83 www.enermax.com.tw Web code: 2164011

The 1,000W Enermax Galaxy power supply will suit those with SLI graphics and other power-sapping components, but it comes at a fairly high price.

OFFICE SUITE



Microsoft Office 2007

Price: £357

Reviewed: May 2007

www.microsoft.com

Web code: 2183475

The new interface to Office is something you'll either like or loathe – we like it, but upgrading comes at a price, both in cash and in effort. Despite this, it's still the leader in office productivity software.

ALTERNATIVE

Corel Wordperfect X3

£276 www.corel.co.uk Web code: 2149856

This latest version of Corel's office suite includes tools such as PDF exporting, along with improved compatibility with other office applications.

SYSTEM UTILITY

Acronis True Image 11

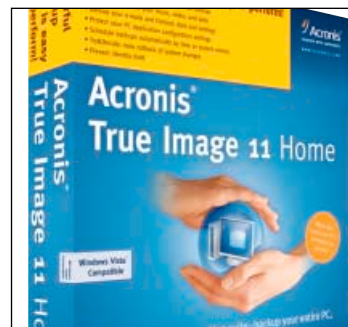
Price: £39.99

Reviewed: April 2008

www.acronis.co.uk

Web code: 2208669

True Image 11 is an excellent backup and recovery solution that offers an unprecedented level of control over disk cloning, scheduled backups and secure file deletion. And, despite the range of features, it's easy to use.



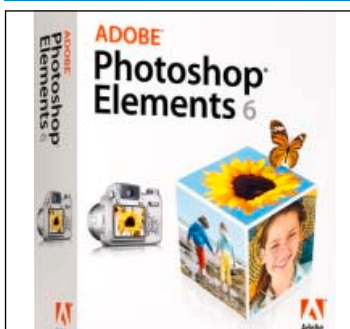
ALTERNATIVE

Paragon Hard Disk Manager

£29.99 www.paragon-software.com Web code: 2205339

A comprehensive, all-in-one suite of hard disk maintenance and backup tools that's easy to get to grips with and comes at a good price.

IMAGE EDITING



Adobe Photoshop Elements

Price: £69

Reviewed: June 2008

www.adobe.co.uk

Web code: N/A

Although the interface could do with some work, this is still the best image editor currently available for home users. With a range of advanced tools, it really does help you get the best from your photos.

ALTERNATIVE

Corel Paint Shop Pro X2

£79 www.corel.com Web code: n/a

A little more expensive than its main rival, Photoshop Elements, but Paint Shop Pro X2 excels in terms of ease of use.

VIDEO EDITING

Pinnacle Studio 11 Ultimate

Price: £89.99

Reviewed: November 2007

www.pinnaclesys.com

Web code: N/A

This video-editing package is well-designed and has powerful video tools, advanced audio tweaking and an easy-to-use interface. A standard version, without the high-definition features, is available for £39.



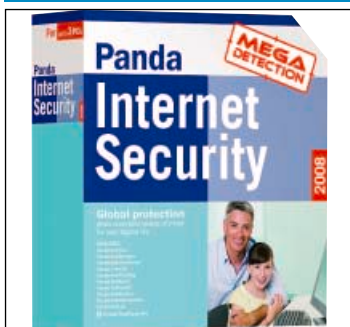
ALTERNATIVE

Cyberlink PowerDirector 7

£59.95 www.cyberlink.com Web code: N/A

With useful 'magic' tools that simplify the editing process, this complete package from Cyberlink is ideal for newcomers to video editing and is well priced.

PC SECURITY



Panda Internet Security 2008

Price: £42.99

Reviewed: January 2008

www.pandasecurity.com

Web code: N/A

A feature-packed internet security suite with fast anti-virus and spyware detection tools, including heuristic scanning. It also has fast scan times and a decent firewall, along with backup and PC optimisation features.

ALTERNATIVE

Agnitum Outpost Pro Security Suite 2008

£30.80 www.agnitum.com Web code: 2204511

Outpost offers solid protection at a competitive price with fast scanning and a quality firewall, although it does lack some extras found in rival suites.

WEB DESIGN

Adobe Dreamweaver CS3

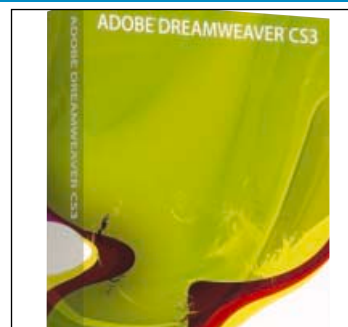
Price: £393

Reviewed: July 2007

www.adobe.com

Web code: 2186591

Powerful HTML coding and design tools along with CSS templates and Ajax widgets will help non-programmers get started. There's also a big emphasis on CSS, including a CSS Advisor tool for newcomers.



ALTERNATIVE

Microsoft Expression Web

£260 www.microsoft.com Web code: 2185242

Expression Web is a very good web-editing suite if you accept the inevitable Microsoft bias, and features CSS support and a powerful interface.

BUSINESS PC



Dell Latitude D531

Price: £586

Reviewed: October 2007

www.dell.com

Web code: N/A

With a dual-core AMD Turion processor clocked at 1.8GHz, 2GB of Ram and Vista Business, this is a good budget model. It also features a built-in DVD writer, 120GB SATA hard disk and both Wifi and Bluetooth.

ALTERNATIVE

HP Compaq dc7800

£598 www.hp.co.uk Web code: 2207533

The space-saving design of this affordable business desktop is very compelling and it can attach directly to an optional HP TFT screen.

BUSINESS PRINTER

HP Laserjet P1505n

Price: £205.63

Reviewed: June 2008

www.hp.com

Web code: N/A

Compact, stylish and quicker than it looks, this Laserjet from HP is a very capable small-business printer and is stunningly good value to boot. It also features an integrated network interface.



ALTERNATIVE

Zebra P100i

£1,245.50 www.zebracard.com Web code: 2212221

A great device for small businesses needing to print plastic cards in volume. It takes up little desk space and can print in full colour.

NETWORK SECURITY



Smoothwall Smoothguard 1000-UTM

Price: £3,231.25

Reviewed: September 2007

www.smoothwall.net

Web code: 2194393

A comprehensive array of security tools, load balancing and failover facilities, and extensive reporting options, mean this network security device justifies the high price.

ALTERNATIVE

Webroot Antispyware Corporate

£22.56 www.webroot.com Web code: N/A

At this price you get a one-year licence for 10 users, which is great value. It also covers two key client security bases in one go.

NETWORK MANAGEMENT

1E Nightwatchman

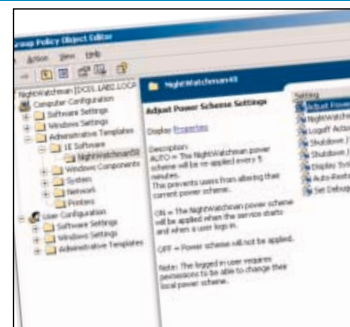
Price: £14.10

Reviewed: March 2008

www.1e.com

Web code: 2207429

This piece of software costs very little, but could save you a lot. Using simple command line controls, it will close applications on PCs on your network, then shut the machines down to cut your energy bills.



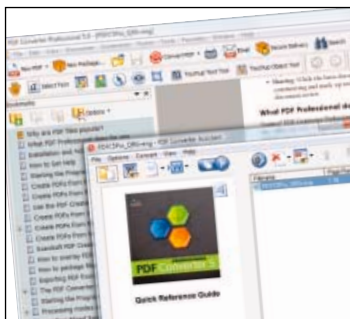
ALTERNATIVE

Prefix IT PrefixNE

Up to £2.94 per PC per month www.prefixit.com Web code: 2205651

Easy to install and use, this network management application allows you to keep track of all the kit on your network and is perfect for small businesses.

COLLABORATION SOFTWARE



Nuance PDF Converter Professional 5

Price: £99

Reviewed: June 2008

www.nuance.co.uk

Web code: N/A

It may often take second billing to Adobe Acrobat, but this latest release is cheaper and just as good - if not better. The only problem is there are so many new tools to learn.

ALTERNATIVE

C2C Archive One Policy Manager

£40 www.c2c.com Web code: 2212370

This is a well-conceived and easy-to-implement exchange storage management tool that can enhance performance and even reduce costs.

BUSINESS ACCOUNTS SOFTWARE

Microsoft Accounting 2008

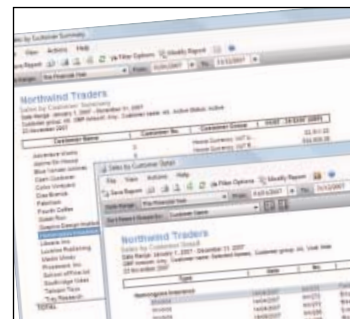
Price: £149

Reviewed: February 2008

www.samsung.co.uk

Web code: 2207529

A late entrant to the UK accounting market, Office Accounting 2008 is easy to use, feature rich and will shake up the competition. It also offers in-depth integration with Outlook 2007 Business Contact Manager.



ALTERNATIVE

Intuit Quickbooks Pro 2008

£299 www.quickbooks.co.uk Web code: 2203178

A sensible update to what is one of the most accessible and easy to master small-business accounting packages around. Includes syncing with Outlook.

ALWAYS

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brother At your side. **MFC-845CW**

The MFC-845CW is a stylish all-in-one flatbed machine providing fax, colour print, colour scan and colour copy features. It's easy to use functions and fast print speed combined with larger 2.5 inch colour LCD and integrated wireless and wired network features make this product the ideal solution for any home or office environment. Keeping with the wireless theme, a DECT wireless phone is provided as standard.

- Up to 22ppm colour printing speed
- Up to 27ppm monochrome printing speed
- Up to 6000 x 1200dpi print resolution
- Up to 100 Sheet Paper Capacity

£99.99
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Part Code: MFC845CWU1

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- 6.3cm colour TFT screen
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- Direct printing: PictBridge, memory cards, camera phone

£149.99
inc VAT

QUICK FIND CODE 27226PCW

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Part Code: 1452B008AA



iiyama PLE2403WS-B1+RAINBOWSIX Monitor Bundle
24in WIDESCREEN 300cd/m2 2000:1 (1920 x 1200)

The new iiyama flag ship 24" display is ideal for both the Home Enthusiast, Gamer and Business professional.

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Buy the iiyama PLE2403WS-B1 24in, Hi Definition, LCD TFT from Oyyy.co.uk and receive Tom Clancy's Rainbow Six Vegas 2 PC DVD-Rom absolutely FREE!



BenQ G2000WA
Wide Monitor 20 inch WSXGA+ TFT LCD

- Maximum Resolution: 1680 x 1050 (WSXGA+)
- Contrast Ratio: 1000:1
- Brightness: 250 cd/m2
- Input connector: D-Sub
- Kensington lock
- Colour: Silver/Black

£109.99
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QUICK FIND CODE 53862PCW

Part Code: 9J.0CA72.A4E

SONY Vaio AR61E Notebook

- Intel Core 2 Duo (T5450) 1.66 GHz Processor with 667 MHz FSB
- 2048MB DDR2 SDRAM
- 17 inch WXGA+ TFT Display (1440 x 900)

£600.99
inc VAT

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How we test

Performance testing is an important part of *PCW's* reviewing process, and to obtain our authoritative results we use the UK's best PC testing resource. Here we explain why you can trust our results and give you a tour of our most frequently used benchmark programs

At the core of our PC performance tests are industry-standard benchmarks from Bapco and Futuremark. Sysmark 2007 Preview is the latest Vista-compatible version in a long line of Bapco benchmarks and it allows us, for the first time, to compare the application performance of Windows XP and Windows Vista-based systems with the same benchmark. It tests real-world application performance by running a series of scripts to mimic authentic user tasks. It loads and runs full versions of 14 market-leading applications, which are:

- Adobe After Effects 7
- Adobe Illustrator CS2
- Sketchup 5
- Adobe Photoshop CS2
- Autodesk 3ds Max 8
- Sony Vegas 7
- Macromedia Flash 8
- Microsoft Excel 2003
- Winzip 10
- Microsoft Outlook 2003
- Microsoft Powerpoint 2003
- Microsoft Word 2003
- Microsoft Project 2003
- Microsoft Windows Media Encoder 9 series

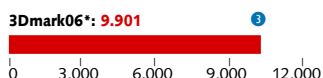
Note that scores from Sysmark 2007 Preview are not comparable to scores from previous versions of Sysmark. All scores are relative to the Sysmark reference machine, which scores 100 (see below for details).

In *PCW's* labs, our staff have over 20 years of combined testing experience. We know all the perils and pitfalls of practical benchmarking, and we contribute to the development of industry-standard benchmarks through our full membership of Bapco (www.bapco.com), the non-profit benchmark consortium. Listed below are the main benchmarks we use for testing PC systems and components.

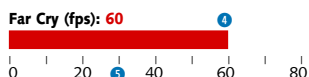
- Bapco Sysmark 2007 Preview – an application-based benchmark that tests real-world system performance.
- Futuremark 3Dmark06 – the latest version of 3Dmark that tests DirectX 3D graphics performance.
- Games – we use built-in benchmarks in Far Cry and Fear to see how graphics cards perform in a real-world games.
- Futuremark PCmark05 – a synthetic benchmark used to test the performance of a PC's major subsystems.
- Test beds – we use standardised AMD and Intel-based test rigs to test components and peripherals.

There's more information about our testing procedures and benchmarks on our Labs site at www.reportlabs.com/testbed/bguides/benchmarks.php.

Performance



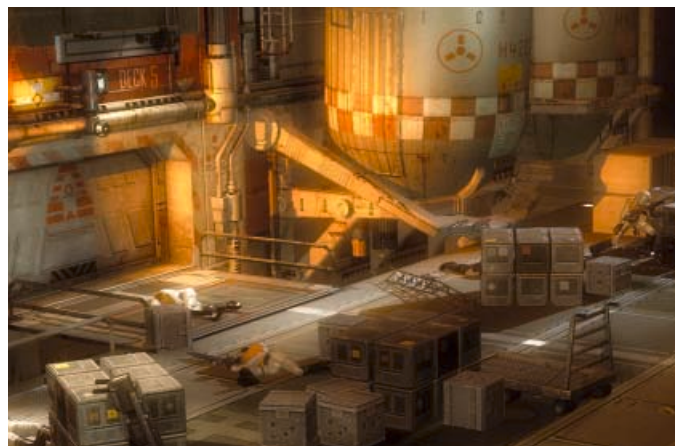
* tested at 1,024x768 in 32-bit colour



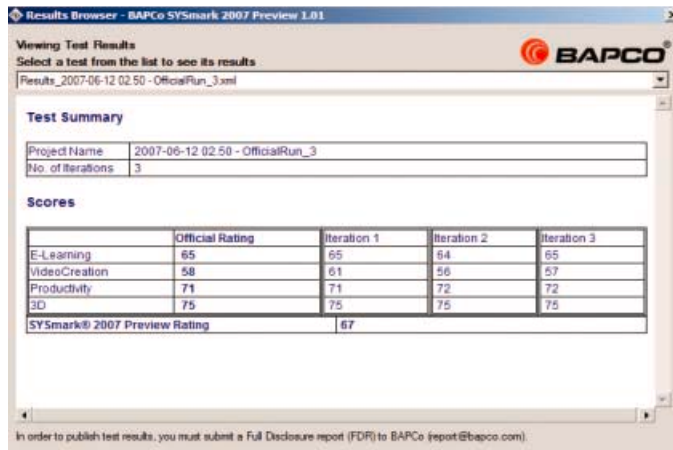
- 1 A score of 200 indicates that the system is twice as fast as the reference PC.
- 2 The reference PC (Intel Core 2 Duo E6300 1.8GHz, 1GB Ram) scores 100.
- 3 An Nvidia Geforce 8600GT would score in the region of 9,900.
- 4 Fear: A score of 60fps (frames per second) or higher is most desirable.
- 5 A result of 30fps or above means the machine can produce playable frame rates at the tested resolution.



PCmark05 measures memory, processor, graphics and hard drive performance



3Dmark06 is used to test 3D graphics performance



Sysmark 2007 Preview tests real-world performance using common apps

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Should your next PC be a Mac?

What's stopping PC users from using an Apple Mac as a Windows PC? Not a lot, as Cliff Joseph discovers

Apple wants you. It really does. After years of appealing mainly to an audience of hardcore Mac fans, the company is increasing its market share and reaching out to a wider audience. And that means you – the typical *PCW* reader who wouldn't normally give the Mac a second thought.

For many years, Apple has actively courted switchers – people who previously owned a PC but have looked enviously at the stylish and elegant design of machines such as the iMac and the recently released MacBook Air. The low-cost Mac Mini was specifically designed to attract people who were thinking about upgrading from an old PC and the company's long-running 'Mac vs PC' ad campaign drums home the message that PCs are dull and geeky, whereas Macs are unspeakably cool.

Even so, PC users have proved resistant to the charms of the Mac over the years (and many found that the smugness of those Mac vs PC ads only hardened their resistance to Apple's wiles). However, Apple has finally

started to chip away at that resistance, thanks to a little piece of software called Boot Camp, which allows you to install Windows on a Mac and use it like an ordinary PC. Although possibly old news for many *PCW* readers, it's a feature that tends to be forgotten.

In this feature we'll look at the practicalities of using a Mac as your main Windows PC. We'll also give you a quick overview of the current Mac hardware range. At the risk of being branded heretics, we're focusing on Windows here rather than Apple's OSX, although we will look briefly at what it has to offer.

Chip change

Boot Camp was made possible by Apple's decision in 2006 to abandon IBM's PowerPC processors and switch its entire product line over to Intel processors. Open up any Mac model today and you'll find dual- or quad-core Intel processors based on the Core architecture, which are identical to those in the PCs we test every month here at *PCW*.

This was a momentous decision for Apple – indeed, many Mac users vilified Apple chief executive Steve Jobs for selling out to the 'evil' monopolists at Intel. However, the switch had knock-on effects that have helped to make Macs more attractive to PC users. Macs have always had a reputation for being overpriced and underpowered

compared to PCs. They may be better designed – just compare the ultra-compact Mac Mini to what passes for small form factor PCs – but you paid through the nose for the machine's good looks. And Apple's adoption of Intel processors was largely forced on it because the PowerPC processor hit a brick wall at around the 2GHz mark, while Intel went sprinting towards 3GHz.

Switching to Intel processors gave the entire Mac range a performance boost almost overnight. Using industry-standard components also meant that Apple was able to compete more effectively on price; it has openly stated that it doesn't want to compete with low-cost PC manufacturers who pile 'em high and sell 'em cheap, but the Mac range is now competitively priced when compared to PC brands such as Sony and Toshiba.

Passing the Open Windows

So, given comparable price and performance, and undeniably superior design, it's not surprising that many PC users have started to think about buying a Mac. The one remaining barrier was the operating system – Macs run Apple's OSX Leopard operating system rather than Windows, which means software written for Windows PCs won't run on the Mac. Software compatibility still prevents many PC users from contemplating the switch to a Mac – and that assumes the software you need is even available on the Mac in the first place.

While there's a version of Microsoft Office for the Mac, and no shortage of creative



Apple's Mac vs PC ads depict PCs as dull and geeky, while Macs are meant to be cool and sexy

Virtual reality

Boot Camp allows the Windows and Mac OSX operating systems to co-exist on one machine, but you still need to reboot your Mac to switch from one to the other. However, there is another option – called virtualisation – that lets you run both at the same time.

Parallels Desktop (\$79.99, about £40), VMWare Fusion (\$79.99) and Sun's Virtualbox (free) all allow you to create virtual machines (VMs) on your Mac's hard disk, onto which you can install a complete operating system, such as Windows or even Linux (Linux is not officially supported by Boot Camp).

The VM then runs within a window on the main Mac desktop, just like any ordinary Mac application, except that it's running an entire operating system rather than a single application. This means you can see the standard Windows desktop running within a window on the Mac desktop, and can launch any Windows program within that VM. This is useful if you just need to run a few specific Windows programs – perhaps testing your web designs on Internet Explorer for Windows, or using another Windows program that isn't available for the Mac. All three programs also allow you to access the Mac's USB ports, although there's no Firewire support.

One interesting aspect of both Parallels Desktop and VMWare Fusion is that they also allow you to integrate the two operating systems more effectively. Parallels Desktop includes a feature called Coherence, while VMWare Fusion matches this with its own Unity option. When you activate these features, they hide the Windows



The 'Unity' option within VMWare Fusion allows you to run Windows programs on the Mac desktop

desktop and display individual Windows programs on the main Mac desktop, making it look as though the program is running natively on the Mac. Although performance takes a bit of a hit in a VM, for many applications it's more than adequate and allows you to do Windows-only tasks – we've successfully used Nokia's phone firmware update routine, for example – without having to reboot the system.

Links

Parallels www.parallels.com

VMWare www.vmware.com

Virtualbox www.virtualbox.org

software for graphics, digital photography and video editing, there are still plenty of Windows programs that aren't available for the Mac. Games, in particular, are a real weakness for the Mac and, while there are Mac versions of Word, Excel and Powerpoint included in Office 2008 for the Mac, there's no Access.

But adopting Intel processors for the Mac range has another big advantage. If Macs use the same hardware as PCs, then it should be possible to install Windows on a Mac and use it like a PC. From a technical view, this is indeed possible. However, Apple has spent decades and billions of dollars developing the Mac operating system, so it's not going to sit back and let you replace it with Windows.

Recognising that the problem of software compatibility was preventing many potential switchers from buying a Mac, Apple came up with its own elegant solution in the form of Boot Camp. Rather than allowing you to remove OSX and replace it with Windows, Boot Camp partitions the Mac's hard drive, splitting it in two so you can install Windows on a new partition alongside OSX. The two operating systems then co-exist on your hard disk, allowing you to dual boot, switching between Windows and OSX as required.

Putting the boot in

Apple uses Boot Camp as a way of removing that final software compatibility barrier. From Apple's point of view, it's offering PC users a safety net so that you can ease yourself into the Mac way of doing things at your own

pace. However, Apple still sees it very much as a stop-gap solution. Ultimately, it wants you to become a 'true believer', using OSX as your primary operating system and only using Boot Camp when you need to run specific Windows programs.

How often you use Boot Camp and Windows on your Mac is entirely up to you. We use Boot Camp on one of our office Macs to test PC products (and occasionally play PC games), and then switch back to the Mac operating system to run Photoshop and other design programs. We find the split is about 50/50 between OSX and Windows, but there's absolutely no reason you can't use Windows as the primary operating system if you prefer.

Using Boot Camp to install Windows on a Mac is very straightforward, with a relatively painless installation process (see the step-by-step guide on page 79). Boot Camp guides you through the process of partitioning your hard disk, installing Windows and installing the

necessary Windows drivers for the graphics card, and other components and Mac-specific features, such as power management. Once that's done, selecting which operating system you want is simply a matter of holding down the Command key on the Mac keyboard (which corresponds to the Windows key on a PC keyboard) when you turn the machine on.

Apple's keyboards and mice tend to be a matter of taste – even among hardcore Mac users. The newer Mighty Mouse with three buttons and a scroll wheel is an improvement on the original single-button model, but it's still an ergonomic nightmare in our opinion. And we're not big fans of the slimline keyboards supplied with the iMac either. Even more pertinent, though, is the fact that some of the keys on a Mac keyboard are in different positions from their counterparts on a PC keyboard. Fortunately, there's nothing stopping you from plugging in a PC mouse or keyboard and using those instead. Boot Camp also

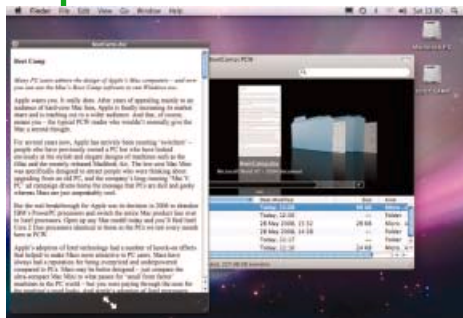
There are several differences between Apple's keyboards and mice and those of a standard PC



A look at Leopard

Although you can install Windows onto any Intel-based Mac and use it as an ordinary PC, it makes sense to at least familiarise yourself with the Mac side of things. Apart from anything else, there's a whole suite of free bundled software that comes supplied with OSX, such as the iMovie video editor, iDVD for burning DVDs and Garageband for music recording and editing.

Some PC users struggle when getting to grips with OSX, while others take to it like a duck to water. The key difference between OSX and Windows is the Finder – the program that allows you to view and manipulate files and folders on the Mac desktop. As well as the standard icon and list views available in Windows, OSX also includes a hierarchical view that allows you to navigate through layer after layer of folders. The latest version of OSX – called Leopard – adds a new Coverflow option that provides a



The Mac's Coverflow viewing mode offers a visual preview of the contents of your files

preview of the entire contents of a folder, making it extremely easy to flick through large numbers of files and find what you need, while Quicklook will preview most documents – including multi-page ones – without having to launch the associated application.

Many Mac users virtually ignore the Finder, though, using the Mac's Spotlight search feature to quickly locate files instead. Spotlight clearly inspired the search tool found in Vista, but there's always been a cross-fertilisation of ideas between the Mac and Windows, dating back to a licensing agreement between Apple and Microsoft in the mid-1980s. Recent demonstrations of Windows 7 (the follow-up to Vista) look even more like OSX than before, so perhaps the switch from Windows to the Mac won't be such a big leap after all.

installs its own set of help files into Windows, explaining how to deal with the differences in keyboard layout, so this probably won't be a big problem for most users.

Opening the box

If you're tempted by the thought of using Boot Camp to run Windows on a Mac, the next step is to take a look at the current Mac range to decide which model suits you best. One thing to remember about virtually all Mac models is that they're closed boxes – you can stick in more Ram if you need to, but you can't open the machine and install a new graphics card or hard disk. That will be a big

'Compulsive tweakers and tuners should probably look elsewhere'

drawback for games fans who want the option of upgrading their graphics cards in future. With that said, many people upgrade nothing but the Ram in their PCs, so for many this won't be much of a problem. However, compulsive tweakers and tuners should perhaps look elsewhere.

Gaming performance – specifically 3D graphics – tends to be a weakness with a number of Mac models. The reason for this is simple: there are few games available for the Mac compared to the vast range you can buy for Windows PCs. Mac users don't seem to play games that much either – they're obviously all busy recording their debut albums in their bedroom or editing their low-budget indie movies with iMovie. This means that Apple can get away with skimping on the 3D graphics simply because the games aren't there to merit high-end graphics cards.

If you are a hardcore gamer, a big tower PC with a twin graphics card setup is probably still your best bet. However, in most other areas, Macs perform as well as their PC counterparts – which is hardly surprising, given that they all use the same basic components.

Like most PC manufacturers, Apple sells



The slimline iMac manages to cram the main processor and other components inside the monitor case

both desktop and laptop systems, and it splits each line into consumer and professional products. The flagship desktop machine for home users is the iMac, with its distinctive and attractive all-in-one design. Prices here range from £799 for the entry-level model, equipped with a 20in screen and 2.4GHz Core 2 Duo processor, up to £1,389 for the top-of-the-range model with its 24in screen and 3GHz processor. Any of these models would make a very good system for home or small-business users, bolstered by features such as the iMac's built-in webcam and wireless networking. Its only weakness is its graphics card, as Apple tends to opt for less expensive ATI graphics cards, rather than the state-of-the-art models preferred by the PC gaming community. There is one iMac model – 24in with 2.8GHz processor, £1,149 – that



Despite its compact design, the Mac Mini includes a full set of USB, Firewire, audio and networking ports

can be configured with an Nvidia Geforce 8800 card for an extra £90 at the time of purchase. It's a shame that this option isn't available with the less expensive 20in iMac models, but the 2.8GHz iMac we tested managed a very respectable 50fps (frames per second) in our World in Conflict gaming test, even with its standard Radeon HD 2600 Pro graphics card.

If gaming or 3D graphics aren't an issue for you, then you might also consider the diminutive Mac Mini. Measuring just 6.5in wide and deep, and a mere two inches high, the Mini's compact design puts many small form factor PCs to shame. The current Mac Mini models offer a Core 2 Duo processor running at either 1.8GHz (£399) or 2GHz (£499), which is more than adequate for day-to-day productivity use.

The standard 1GB of Ram is a bit tight for running Vista – although it's fine for XP – but can be upgraded to 2GB for about £60 at the time of purchase. The other weakness is the integrated Intel GMA 950 graphics processor, which isn't suitable for playing the latest 3D games. Remember, too, that the price of the Mac Mini doesn't include a keyboard, mouse or monitor, as Apple is hoping that the Mini's low price will tempt existing PC users to buy it and carry on using their existing PC peripherals. We've also read reports of people running Windows Home Server on the Mac Mini, which we're investigating further.

Laptop line-up

The success of the iMac saved Apple from near extinction when it was first launched 10 years ago. However, it's Apple's laptops

Heavy metal

We've mentioned that most Mac models are closed boxes that are not intended to be opened and upgraded by installing new graphics cards, hard disks or other components.

The one exception to this rule is the Mac Pro – Apple's professional desktop workstation. The Mac Pro is a large tower system that provides plenty of room and expansion slots for upgrading. However, instead of the Core 2 Duo processors used by the rest of the Mac range, the Mac Pro uses twin Xeon quad-core processors with speeds ranging from 2.8GHz to 3.2GHz, producing an immensely powerful eight-core computer system.

The raw processing power offered by the Mac Pro is impressive – as evidenced by its Cinebench test scores – and you have great freedom to customise and upgrade the machine to suit your individual requirements. But with prices starting at £1,749 (without a monitor), it is very much a machine for professional users who need a powerful workstation for video-editing, graphics or animation work.



The Pro is the most upgradeable Mac model, but is primarily designed for professional users

that are the star performers these days, accounting for almost two-thirds of sales so far this year.

The Macbook range is split into three product lines. The standard Macbook is the less expensive consumer model and is specifically aimed at home users and students. All Macbooks have a 13in screen and there are two models in white, priced at £699 with a 2.1GHz Core 2 Duo processor, 1GB of Ram and a 120GB hard disk, or £829 for 2.4GHz, 2GB of Ram and a 160GB hard disk. There's also a special edition in black that runs at 2.4GHz with 2GB of Ram and a 250GB hard disk. However, this model costs

£949 and it seems ludicrous that the £100 extra is purely for the colour.

And, of course, there's the graphics card issue again. All three Macbook models use integrated Intel GMA X3100 graphics, which in our tests managed an underwhelming 5fps when running World in Conflict. The Macbook obviously isn't a gaming laptop, then, but it's a good, affordable option for pretty much everything else, and its built-in webcam, Wifi, Bluetooth and Firewire connectivity provide good value for money.

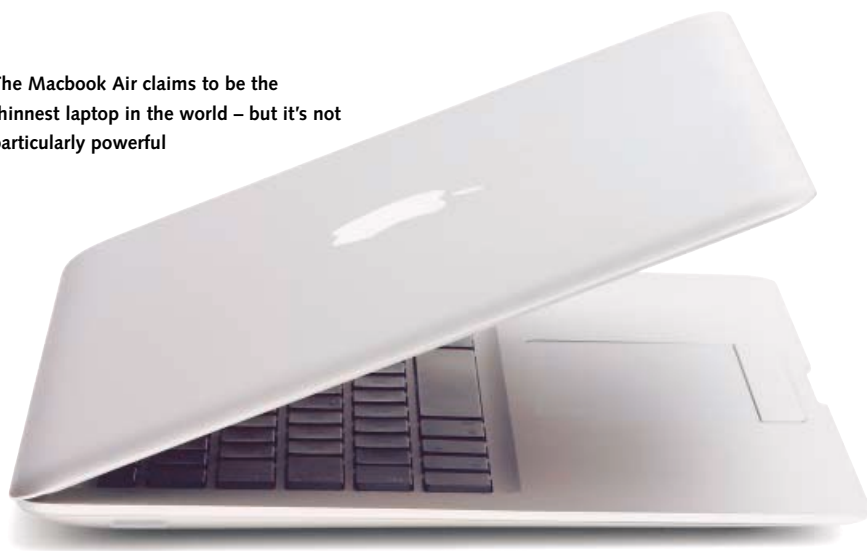
If you're looking for a laptop that can handle gaming, then the Macbook Pro is a better choice. As the name implies, it's

How Macs perform under Windows

To get a feel for Windows performance, we ran a some of our benchmarks under Vista Home Premium on six Macs. We also noted the Windows Experience Index. To put the scores in context, we included results for a Toshiba Satellite 2.4GHz Intel Core 2 Duo T7700 CPU laptop costing £1,000.

MODEL	iMAC 24IN (2.8GHZ)	MAC MINI (1.83GHZ)	MAC PRO (3.2GHZ)	MACBOOK (2.4GHZ)	MACBOOK AIR (1.6GHZ)	MACBOOK PRO 17IN (2.5GHZ)	TOSHIBA SATELLITE P200-1K9
VISTA EXPERIENCE INDEX							
CPU	5.6	5	5.9	5.3	4.5	5.4	4.8
Memory	5.9	4.5	5.9	5.1	4.8	5.1	4.8
Graphics	5.9	3.6	5.9	3.5	3.5	5.9	4.8
Gaming	5.5	3.3	5.9	3.5	3.5	5.4	4.9
Hard drive	5.8	4.8	5.9	5	4.4	5.2	5.3
PCMARK05							
Overall	Did not run	3,803	10,403	4,689	2,988	5,120	5,964
CPU	Did not run	4,861	10,130	5,970	3,322	6,047	6,261
Memory	Did not run	3,934	5,848	4,597	3,586	4,937	4,673
Graphics	Did not run	1,317	15,790	1,949	1,396	4,548	4,979
Hard drive	Did not run	3,706	6,739	3,884	2,449	4,007	4,494
CINEBENCH							
Single-CPU	506	334	574	427	239	450	416
Multi-CPU	939	620	1,820	793	400	831	750
WORLD IN CONFLICT (1,024x768)							
Average fps	50	5	60	5	8	40	N/A
Min frames per sec	19	2	30	3	4	20	N/A
Max frames per sec	101	14	130	14	20	95	N/A

The Macbook Air claims to be the thinnest laptop in the world – but it's not particularly powerful



Apple's professional offering, aimed at users in creative fields such as design or video editing. The key difference between the Macbook Pro and the standard Macbook is that the Pro has a bigger screen.

There's a 15.4in model with 2.4GHz Core 2 Duo processor, 2GB of Ram and a 200GB hard disk, priced at £1,299, while the 17in version costs £1,799 and bumps the clock speed to 2.5GHz and the hard disk to 250GB. Both models use an Nvidia Geforce 8600M GT graphics card, which makes the Macbook Pro much more suitable for games – it clocked up a

respectable average of 40fps in our World in Conflict test. However, if you're not too worried about games performance, the standard Macbook for £829 seems like the sweet spot in the range.

Finally there's the ultraportable Macbook Air. Claimed to be the thinnest laptop in the world, it measures just 0.76in thick and weighs a mere 1.36kg. However, shrinking it down to that size involved a few compromises in terms of performance and features. It costs £1,199 for a model with a 1.6GHz Core 2 Duo processor, 2GB of Ram and an 80GB hard disk. The 1.6GHz processor isn't a top

performer – and neither is the integrated Intel GMA X3100 graphics processor.

Having said that, the Macbook Air compares well with other ultraportables from big-name brands such as Sony and Toshiba. However, its single USB port and omissions such as the lack of optical drive and Ethernet port are enormously irritating – if you need these, you'll have to pay for optional extras and plug them in via USB. The Macbook Air is available online from www.apple.com/uk or from one of Apple's 15 stores in the UK.

The Mac menu

The fact that the Mac range now uses Intel processors means that any given Mac model performs comparably to a conventional PC with a similar specification.

Where the Mac range tends to be let down is by Apple's lack of interest in gaming and 3D graphics, which leads it to use below-average graphics cards in less expensive models such as the Mac Mini or Macbook. The iMac and Macbook Pro provide stronger 3D graphics performance, although we still think hardcore gamers will be better off sticking with a conventional, upgradeable PC or gaming laptop.

So, should your next PC be a Mac? Well, we're not saying that it's the right choice for everyone, but there's certainly no reason a Mac shouldn't be on your shortlist.

Apple Macs: the range at a glance

MODEL	iMAC 20IN	iMAC 24IN	MAC MINI	MACBOOK	MACBOOK AIR	MACBOOK PRO
Price	£799/£949	£1,149/£1,389	£399/£499	£699/£829	£1,199	£1,299/£1,599
Processor	Intel Core 2 Duo	Intel Core 2 Duo	Intel Core 2 Duo	Intel Core 2 Duo	Intel Core 2 Duo	Intel Core 2 Duo
Speed (GHz)	2.4/2.66	2.8/3.06	1.83/2	2.1/2.4	1.6GHz	2.4/2.5
Standard Ram (GB)	1	2	1	1/2	2	2
Max Ram supported	4	4	2	4	2	4
Hard disk (GB)	250	320/500	80/120	120/160	80	200/250
Graphics	ATI Radeon HD 2400 XT/ATI Radeon HD 2600 Pro	ATI Radeon HD 2600 Pro*/Nvidia Geforce 8800 GS	Intel GMA 950	Intel GMA X3100	Intel GMA X3100	Nvidia Geforce 8600M GT
Video memory (MB)	128/256	256/512	64 (shared)	144 (shared)	144 (shared)	256/512
Screen (diagonal in)	20	24	N/A	13.3	13.3	15.4/17
Resolution	1,680x1,050	1,920x1,200	N/A	1,280x800	1,280x800	1,440x900/1,680x1,050
Optical drive	8x DVD±RW	8x DVD±RW	8x DVD-Rom/CD±RW/8x DVD±RW	8x DVD±RW	N/A	8x DVD±RW
USB2	5**	5**	4	2	1	2
Firewire	1 Firewire 400, 1 Firewire 800	1 Firewire 400, 1 Firewire 800	1 Firewire 400	1 Firewire 400	N/A	1 Firewire 400, 1 Firewire 800
Ethernet	Gigabit Ethernet	Gigabit Ethernet	✓	Gigabit Ethernet	N/A	Gigabit Ethernet
Wireless	802.11n	802.11n	802.11g	802.11n	802.11n	802.11n
Bluetooth	✓	✓	✓	✓	✓	✓
Additional hardware	Apple remote control, built-in webcam, microphone and stereo speakers	Apple remote control, built-in webcam, microphone and stereo speakers	Apple remote control	Built-in webcam, microphone and stereo speakers	Built-in webcam, microphone and mono speaker	Built-in webcam, microphone and stereo speakers, Expresscard 34 slot
Bundled software	iTunes, iPhoto, iMovie, iWeb, iDVD	iTunes, iPhoto, iMovie, iWeb, iDVD	iTunes, iPhoto, iMovie, iWeb, iDVD	iTunes, iPhoto, iMovie, iWeb, iDVD	iTunes, iPhoto, iMovie, iWeb, iDVD	iTunes, iPhoto, iMovie, iWeb, iDVD
Warranty***	1yr RTB	1yr RTB	1yr RTB	1yr RTB	1yr RTB	1yr RTB

*Upgradeable at time of purchase ** Three on iMac, two on keyboard *** RTB = return to base

Installing Bootcamp and Windows on your Mac



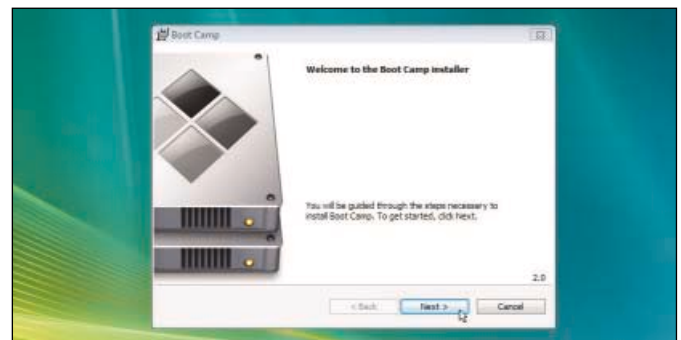
1 To install Windows onto your Mac, you need to locate and launch the Boot Camp Assistant (Applications, Utilities), which will guide you through the installation process. It's worth taking a look at the Installation and Setup Guide for Boot Camp before proceeding, as the process will vary depending on which version of Windows you're using. Most Macs only support Windows XP or Vista 32-bit versions, but the Mac Pro and some newer Macbook Pros support 64-bit Vista. For XP, you need a full version (not an upgrade) with Service Pack 2 included.



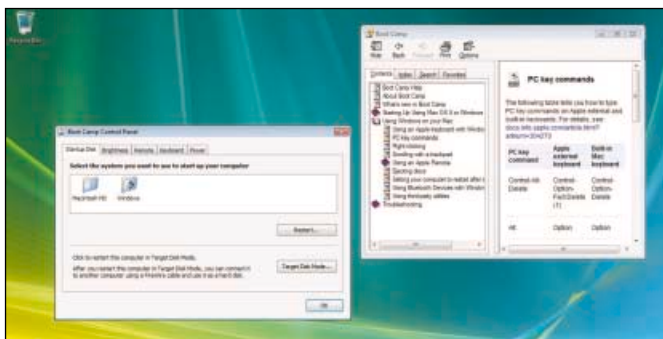
2 The Boot Camp Assistant will now partition your Mac's hard disk, creating a second partition onto which you can install Windows. By default, it starts with a small 5GB partition for Windows, but you can tell the program to split the disk into two equal halves or adjust the partition size manually and set the Windows and OSX partitions to whatever size you want. There is an advantage to having the two operating systems side by side on the same disk; if something goes wrong with Windows, you can boot into OSX and retrieve any important files before attempting to repair it.



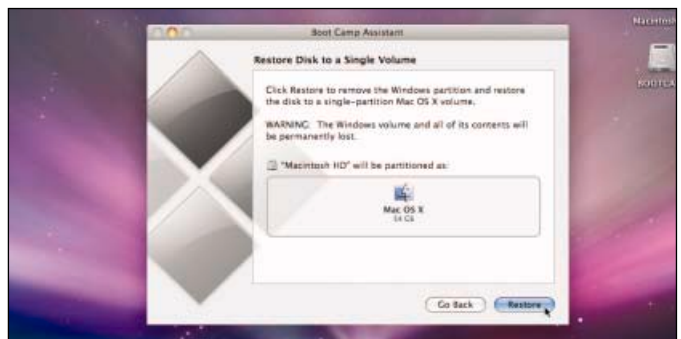
3 You can now see the Boot Camp partition on the Mac desktop, and you're ready to install Windows. Make sure you've read the Boot Camp Installation and Setup Guide, though, as you may need to reformat your Windows partition, depending on which version of Windows you're using. For Windows XP, the partition will need to be formatted using the Fat file system, while Vista can be installed on a partition using either Fat or NTFS. OSX can read both Fat and NTFS disks, and can write to Fat too, so it's possible to exchange files between the partitions.



4 Once you've inserted your Windows disk, the installation proceeds just as it would on an ordinary PC. However, once Windows is set up, you'll need to insert the OSX system disk that was originally supplied with your Mac; this installs the Windows drivers for all the Mac hardware – the graphics card, wireless and Bluetooth networking – and additional features such as the webcam built into the iMac and Macbook models. You can even use the little Apple remote control supplied with some Mac models to play music or video files with the Windows Media Player.



5 As well as installing Windows drivers for your Mac hardware, the OSX system disk also adds this Boot Camp control panel to the main Windows Control Panel. It lists both the Mac and Windows disk partitions and allows you to switch between them at will. You'll also see (on the right of the screen) a set of Boot Camp Help files. These provide information about how to run Windows properly on the Mac, as well as outline the differences between the two systems – such as the keyboard layout.



6 If anything ever goes wrong with your Windows installation – or if you decide to go the whole hog and become a Mac switcher – you can launch the Boot Camp Assistant in OSX again and use it to delete your Windows partition. You can delete and repartition the Mac's hard disk as often as you want. The only minor disappointment is that Boot Camp only allows you to create a single Windows partition; you can't create two and use one for XP and one for Vista. However, that's where virtualisation comes in – see page 75.

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Free satellite TV for all

The arrival of Freesat raises the option of free satellite TV on your PC. Nigel Whitfield explains



For many years, satellite television in the UK has been synonymous with one company – Rupert Murdoch’s Sky. And because of encryption contracts and proprietary software, anyone hoping to record television programmes on a media PC has been out of luck, with some main channels such as Channel 4 locked up using Sky’s encryption system.

However, all that changed in May with the launch of Freesat, a new service backed by the BBC and ITV that promises free channels – including all five terrestrial services – free high-definition content and easy-to-use

features such as an electronic programme guide (EPG). But beyond all the fanfare that surrounded Sky’s first ‘free to air’ competition, what has really changed with the launch of Freesat and, more importantly for PCW readers, does the new service mean that satellite reception on the PC is a more practical proposition than it has been in the past?

In this feature, we’ll look at what Freesat really is, and find out whether and how it’s changed not just standard TV viewing, but also the landscape for PC owners who are thinking about using their computers to record and watch digital television. For a deeper look at

the practicalities of receiving Freesat on a PC, take a look at this month’s Hands On Performance column on page 142.

Amid all the publicity Freesat received when it launched, there has been some confusion. For example, one PC satellite tuner company claimed compatibility, only to have Freesat state the opposite; some stores have been caught refusing to sell equipment without installation, so it’s worth explaining exactly what it is before looking at the technical side of things, and what it means for PC users.

First, there aren’t any new satellites; none of the broadcasters own one. The most

INTRODUCTION TO FREESAT

Panasonic has launched a range of TVs with built-in Freesat tuners – no set-top box required



'Sky's Freesat from Sky service isn't guaranteed to last forever'

popular satellite broadcaster in the UK, Sky, rents its transponders from SES Astra, and all the channels you can receive on a Sky box are broadcast from Astra's cluster of satellites at 28.2° east of due south; the cluster is collectively known as Astra 2.

Freesat not only uses the same cluster, but also the same transmissions – with a couple of exceptions. There's no 'Freesat satellite' or 'Sky satellite' – just Astra 2. That means if you have a dish set up for Sky, it will also receive Freesat. So, what's different? And what's the point?

Throwing off the shackles

One of the main reasons for the creation of Freesat – and the approval of the idea by the BBC Trust – is to ensure that after the switchover to digital-only transmissions, the core BBC and ITV channels are still available, even in areas that won't have terrestrial Freeview coverage. But doesn't Sky do that already? Well, yes, but Sky's 'Freesat from Sky' service isn't guaranteed to last forever, and relies on the proprietary Sky box and the issuing of access cards.

By running Freesat on a non-profit basis, the idea is that the main terrestrial broadcasters won't be entirely in the hands of a competitor – and will be able to launch new services more easily. That includes services to take advantage of the Ethernet RJ-45 connector that's mandatory on every Freesat

ITV HD on your PC

Since ITV HD isn't broadcast as a channel, but as an H.222 data stream, you may need to tune it manually in your PC's tuner software. These are the details you'll need:

Eurobird 1, Frequency 11426
Horizontal, Service ID 10510, Video PID 3401, Audio PID 3402, PMT PID 3400, PCR PID 3401.

See this month's Hands On Performance for more details of suitable DVB-S cards.

box: this can be used for a return path on interactive services and for delivering video content via the internet. So, for example, your broadband link could be used for voting in competitions and to deliver BBC iPlayer content to your TV, via a Freesat box, which is something that should be available later this year.

It's the desire to offer features such as these – plus a few other extras such as fixed channel numbers, beloved of broadcasters – that means Freesat had to create a box specification of its own, rather than just tell people to use standard 'free to air' satellite receivers, which are popular in many other countries. For more about the technical side of the system, check out the box 'Inside Freesat' on page 86.

Freesat and your PC

Obviously, what has appeared in the shops so far is Freesat receivers, but the new service also has some potential implications for those who want to receive satellite TV on their PCs.

One of the most significant is simply the lack of encryption; all the channels on Freesat are broadcast in the clear, including Channel 4 and – from sometime later this year – Channel 5; see www.freesat.co.uk for the full list. Previously, both these channels relied on Sky to provide encryption and regionalisation and, although they were free in the sense that you could use a Sky box with a £20 one-off

Humax was the first company to produce a Freesat HD receiver, with a PVR to follow this summer





Above: Other receivers are from the Alba group, which includes Bush, Goodman's (above) and Grundig

Right: A range of SD and HD boxes are now on sale for Freesat



'Freesat from Sky' card to receive them, a standard PC satellite card wouldn't be any use (although some Linux-based PVR (personal video recorder) software could emulate the necessary Sky decryption software with a card reader). Channel 4 is now broadcasting on Freesat, along with E4, More4 and Film4, and with Five coming soon, those who can't get Freeview but want to build their own PC-based video recorder will find that doing so has become a lot simpler.

Eagle-eyed readers of PCW's website will recall Hauppauge claiming its satellite product was suitable for receiving Freesat, only for

'Channels including BBC HD have indicated they may move to DVB-S2 in future'

Freesat to claim otherwise. So, what's the story? It's actually a little in between. Freesat has a logo, and a specification for its receivers and a licensing programme. You can't put the Freesat logo on something, or call it a Freesat receiver, unless it meets the specifications – and as explained in the box 'Inside Freesat', that includes some elements such as the interactive MHEG software, or software that understands the Freesat broadcast EPG, which you don't get in the box with a PC tuner.

But if you put a satellite card in your PC, since all the channels are transmitted as standard DVB-S free-to-air broadcasts, you'll be able to tune into them. You won't get the 'red button' interactive stuff or, usually, the programme guide either. However, you'll still be able to watch them. It's not true, as some websites have claimed, that only Freesat receivers will receive the programmes.

There are a few things to be aware of. For example, at the moment, ITV HD is broadcast as an interactive data stream, rather than as a standard channel, so most software may skip past it when you tell it to scan for channels (see

the box opposite for details). And since some software comes with tools to grab an EPG from the internet, you won't need the one that Freesat broadcasts.

At the moment, all you need is a tuner card or USB module that supports the DVB-S (Digital Video Broadcasting – Satellite) standard, but we recommend you opt for one that can handle the newer DVB-S2 standard instead, as channels including BBC HD have indicated that they may move to this in future since it's a more efficient way of broadcasting.

And if you're prepared to forgo Windows in favour of the Linux-based MythTV media centre package, work's already under way – thanks to some clever reverse engineering – to

decode the Freesat EPG data. It's also possible to decode some of the interactive elements, which means if the BBC iPlayer on Freesat is delivered as a 'red button' MHEG application, it might be possible to make it work on MythTV too.

But before you install MythTV, it's important to realise that Freesat support is still experimental. According to David Matthews, who created the EPG patches, there's quite a lot of work to be done and there are a lot of rough edges.

High definition

Besides the basic free-to-air channels, one of the other selling points for Freesat is high definition (HD) without a subscription.

Satellite basics

If you have a satellite dish already and want to add a PC Card or Freesat receiver, it's not quite as straightforward as splitting a terrestrial TV aerial. At the end of your satellite dish arm is the Low Noise Block downconverter, or LNB. This shifts the frequencies of broadcasts, then sends them along the cable to the tuner in the receiver. And, unlike a TV aerial, it's not passive; it has to be set to high or low band, and vertical or horizontal polarisation by the receiver. Therefore, two tuners on the same LNB would be forced to watch channels in the same band and polarisation.

For each tuner to have complete choice of available channels, it needs its own LNB and connecting cable. You can buy a dual-LNB, which is one unit to mount on the

satellite arm containing two independent outputs, and quad- or octo-LNBs with four or eight outputs. A twin-tuner PVR needs two connections, so on many installations, a quad-LNB is the standard, which allows for additional receivers.

For more options, a quattro LNB has four fixed outputs – one for each combination of band and polarisation – and is used with a multiswitch. These work a bit like a TV aerial amplifier, allowing for many outputs – 12, 16, or more – and look at the signal from the tuner, connecting that tuner to the appropriate signal from the LNB, which give full channel choice on every connection. A fifth input on most multiswitches also allows them to be used to pipe terrestrial TV around the home.

Inside Freesat



This Genre selection screen appears each time you enter the Freesat EPG

Freesat's technical specification is largely based around the requirements of its electronic programme guide (EPG). To co-exist with Sky's systems, there had to be some co-operation with the broadcaster, which leases some of the transponders, and some changes to the way data is sent to receivers.

The DVB standard includes 'Service Information,' or SI, which carries EPG data. But because Sky has its own SI being carried on the transponders used, Freesat had to slot its data alongside this. Each element of the data stream in digital broadcasting has a packet ID (PID), and to co-exist with Sky, Freesat's data had to use non-standard PIDs, which is one reason existing free-to-air receivers won't see it. Another is that the text is compressed (fully deciphering that compression is at the core of the work needed for MythTV to see the EPG).

As well as basic EPG data, Freesat is broadcasting metadata that indicates which programmes are part of a series, which enables recorders to automatically record the whole set, as well as track changes to schedules and resolve clashes. In addition to the EPG data on the channel transponders, there's a full EPG broadcast from the Eurobird 1 satellite – at 28.5° east, it's close enough to Astra 2 so that the dishes will pick up both.

Interactivity is based on an enhanced version of MHEG5 1.06, the system used on Freeview. The additions allow for the mandatory Ethernet port to be used as a return channel by interactive applications and for receiving IPTV streams.

HD-capable boxes must support the H.264 codec and DVB-S2, but it's not mandatory on SD models; the word from Freesat is that all boxes must have Ethernet and IPTV services will be available on all receivers "where technically possible". At PCW, we'd recommend an HD box just to be sure that you'll be able to receive H.264 content via the internet too.

Besides the technical requirements, Freesat also mandates some interface issues, such as the minimum number of channels shown on the EPG and the fact that the Genre selection screen is always shown when you enter the guide, resulting in two button presses to get to the listings – unfortunately, this is one of the most annoying and, frankly, bonkers user-interface decisions we've seen in a while.

Within those specifications, however, there's scope for manufacturers to change things around, so that on-screen displays and the keys used for some functions will be different. That means while Freesat boxes won't have the uniformity of Sky receivers, nor will they have the annoyingly huge differences found among Freeview boxes.



Freesat specifies elements of the EPG, such as the number of channels displayed

Technically, you can now receive BBC HD with a standard HD satellite receiver, a PC Card (see *PCW*, September 2007, www.pcw.co.uk/2193236) or a subscription-free Sky HD box. But with the latter being fairly expensive without a contract, the majority of people viewing HD in the UK have tended to be Sky subscribers. And that's one thing Freesat hopes to change.

That said, the HD offerings are limited to BBC HD, which should have increased from its four hours a day to around nine by the end of the year, and ITV HD, which launched with the start of Euro 2008 and is planning to show selected films and sports events over summer. Like BBC HD, it uses the H.264 codec, so you'll need a powerful PC or a graphics card with H.264 support to get the best out of it.

That's it as far as HD goes – Channel 4's HD service is still tied to Sky's encryption, but may appear later, but both broadcasters and Freesat are being cagey about what channels will appear and when (beyond confirming Five), and there should be around 200 channels by Christmas 2008. The bulk are likely to be ones you can pick up with a PC Card, added to the EPG – the need to co-ordinate some work with Sky means it can't be done overnight.

What next?

So far, there aren't any firm plans for a licensed PC solution for Freesat, but it has not been ruled out either. In the meantime, unless you buy one of the official receivers, the most important change that Freesat has brought about for *PCW* readers is that it's finally

possible to buy a cheap satellite card for your PC and record all the main five channels, as well as most of their digital spin-offs.

With a little effort and Linux software like MythTV, it will even be possible make your own satellite PVR (see www.pcw.co.uk/2197364), and use an internet EPG to schedule recordings.

For those who have to pay Sky £10 a month to record on a subscription-free Sky+ box, it's potentially very attractive. And it's likely too that at least one of the Freesat PVRs – probably the Humax model, due this autumn – will allow you to transfer standard-definition programmes across to your PC.

Even if you don't plan to buy a dedicated Freesat box, one thing's clear – satellite TV on your PC is now much more straightforward in the UK, and that has to be good news. **PCW**

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Give your PC wheels

Nigel Whitfield explores the fascinating world of in-car computing

Browse through sales brochures for the latest new cars and some form of onboard computer will probably appear on all but the lowest of the range. It'll be a lot more sophisticated than earlier offerings (remember the talking Austin Maestro?), and way ahead of the simple fuel consumption calculations offered by the trip computers of the 1980s.

A modern car computer can be expected to combine entertainment with telematics (the term commonly used to refer to automotive communications and navigation systems), so it will control radio and music playback, guide you to new destinations via GPS, handle your phone calls, and let you know if there are problems with the engine, or if the tyres need a little more air.

Much of this will appear on a large display screen built into the dashboard, with options ranging from just a few lines of text to a full-colour display with detailed maps – and, perhaps, connections for plugging in a portable music player and browsing the tracks via controls on the steering wheel.

If you're in the market for a new car, it can be a very attractive – if sometimes pricey – option. But what if you have an older model? Thanks to modern small form factor PCs, the falling price of LCD panels and a wealth of low-cost software, it's easier than ever to put together a PC-based in-car computer. While you may not end up with the polished look of the latest factory-fitted systems, it's possible to come pretty close.

You can, with some planning and imagination, fit something in your car that will give you most of the features of the latest factory-fitted systems for a fraction of the price.

Music, maps and monitoring

Computers are so ubiquitous in cars today that we often don't realise that they're there, but if you're thinking of fitting or building one for your car, you'll first have to decide what you want it to do.

The most obvious tasks are also the most common. Music probably comes first, and it's obvious that a PC can manage playback of music – and even video for back-seat passengers – without the hassles of unreliable CD auto changers, fiddling with the small screen of an iPod in a holder, or the 'CD1, Track 4'-type of useless information a typical in-car unit displays when it's confronted by a CD full of MP3 files.

Maps and navigation come near the top of the wish list, too; *PCW* readers will be familiar with the portable sat-nav systems we've tested over the years, and it's a great use of a car PC.

Another popular use of computer technology in cars is monitoring – providing feedback on economy, the state of the engine, problems that need attention at the next service, and even things like tyre pressure warnings. It's taken to perhaps the highest level by systems such as Fiat's Ecodriven (see box on page 91, 'Microsoft in your motor').

Communications are also important: a link to your mobile phone should be integrated into the system, complete with contact synchronisation, so once a number's stored in the phone, someone's name will appear on the in-dash screen, and the music can be muted when a call comes in. Some systems will provide

access to your emails and text to speech, so that they can be read out, helping you keep your eyes on the road – the in-car PCs used by car manufacturers Citroën and Peugeot can do this today with systems from Italian firm Magneti Marelli.

The Digital Car forums are a great place to start learning about in-car PCs



This 2-DIN module includes a touchscreen display and a DVD drive, but no PC. It's essentially just a USB drive and VGA display in a car-compatible case



Doing it yourself

There are obviously many things a PC can do in the car, but the big question for many PCW readers will surely be: "Can I do it myself?" With compact PCs cheaper than ever, and a wealth of low-cost software available, is it really worth spending several hundred pounds – and well over £1,000 in some cases – on a factory-fitted system? And, of course, if you have an older car, that won't be an option.

The good news is that it's probably a lot easier than you think to put together an in-car system that can rival, and in some ways exceed, the functionality of a factory-fitted system. And if you're prepared to put in some work, you can end up with a solution that looks like it has always been there.

There's a wealth of information available online, including the Digital Car forums at www.digital-car.co.uk and www.MP3Car.com. Although the latter is US-based, it is still a great place to source information. To a large extent, putting together a car system is not really that much different from building any other PC, but there are obviously some extra considerations, such as power supply and the user interface. However, plenty of people have been down the same road before and it's much easier to do than you might think. We'll look at some of the considerations in the rest of this article.

The basics

When you're driving, you don't want to have to spend ages hunting around a screen to find the right option – digging through the Windows Start menu is obviously dangerous. So there are two key elements to most car PCs. First is a touchscreen display and the second is software that makes the most of it; we'll look in more detail at software later. The cheapest touchscreens start at less than £200 from stores such as

LinITX (www.linitx.com) and KustomPCs (www.kustompcs.co.uk), both of which have sections on their websites specifically for car PC parts. But if you want a good-quality bright display, bank on spending around £300. Screens can be bought either standalone or ready fitted into a standard car radio module (called a DIN module), or a double height '2-DIN' size. In fact, you can buy a barebones system in a 2-DIN module if you don't want to mix and match the parts.

Power is also an issue; while a few people rely on separate batteries for their in-car systems, that's not practical for most, and so a good-quality power supply is needed that can cope with the fluctuations you'll see when, for example, the engine is started, as well as the electrical noise often found in a car. Systems such as the Carnetix power regulators will set you back around £50 to £60, but as well as providing clean power to the PC, they can also send shutdown and wake-up signals, so that the PC can spring to life when the ignition key is turned on and go to sleep when you turn it off.

The PCs themselves needn't be that expensive – touchscreen displays typically only have resolutions slightly higher than VGA – although if you want a twin display, you may need to rely on a graphics card rather than integrated motherboard graphics. LinITX sells a 1.5GHz bundle with memory, disk, power supply and case for £292.08, while KustomPCs offers a £799 system based on the same Via 1.5GHz C7 processor that needs disk and memory added, but includes a 6.5in touchscreen in the 2-DIN case, along with an FM receiver, GPS and amplifier.

Those last three items are also important parts of most car PCs, and if you don't buy a system that includes them, then you'll need to budget extra. FM radio is taken care of in many systems by a simple USB tuner stick, although it's important to check the compatibility with the software that you

Multiplex wiring issues

Anyone who has ever looked at the wiring of an old car will be familiar with the mess of spaghetti that can make up the typical 'wiring loom', with big bundles of cables all looking remarkably similar, feeding lights, switches and all the other parts of a car. And, especially in older cars, wiring issues can take a long time to resolve.

Step forward multiplex wiring, found in an increasing number of new cars and often touted as a solution for much greater reliability. It means fewer wires are needed, so there's less to go wrong, and internal data connections can carry information around the car, so the CD changer in the boot knows when you've pressed the 'next track' button on the steering wheel.

It's a great idea, but also a potential problem for those who want to customise, as there's not a single standard for this sort of system in the way that ODB2 standardises diagnostics information. That means, for example, if you want to change the in-car audio system but retain the integration with steering wheel controls, you may be limited to products sold by the car's manufacturer or a small range of compatible systems.

It's not completely insurmountable – there are adapters that will link different devices together, so the buttons on your BMW steering wheel can control icons on the car PC, for example. And there are USB adapters that will work the other way, allowing for the controls on an existing Pioneer head unit to select tracks on a car PC or a Palm organiser in the same way as they would for a CD changer.

Nevertheless, if you're thinking of building a car PC system and you have a car with multiplex wiring or features such as steering wheel audio controls that you want to use, it's not as straightforward as simply hooking up a few cables.

On the positive side, some manufacturers, including Hyundai-Kia, are including USB interfaces as standard on many models, making it very easy to simply add a large collection of music to your car and access it through the built-in controls if that's all you want to do.

We can expect to see more of this kind of system in future, but there's not, sadly, any sign of a standard in-car protocol for entertainment and instrumentation to complement ODB2.

IN-CAR COMPUTERS

plan to use, so ask on forums like Digital Car if you're unsure. You can buy these for less than £20 but, depending on where the car PC is installed, you may need to add an external aerial, which could mean having to open the case and solder a connection.

Similarly, you'll need a GPS receiver, as well as somewhere to fit it in the car where it will be able to pick up a decent signal – if the PC is tucked under the dashboard or in the boot, it's not going to work, nor will the reflective coatings on some windscreens help, so you may need a module that has an external aerial or a long cable. It's definitely worth checking around the car before buying to see how things like the GPS receiver can be mounted.

In addition, you'll probably need an amplifier. If you intend on keeping your existing car stereo, then check to see if it has an 'aux' input through which you can feed sound from the PC or you could buy a



Centrafuse isn't free, but it does provide a complete software solution for your in-car PC

standalone car power amplifier. If you want to link to your phone, you'll need a Bluetooth module as well.

None of these things is very expensive – and you if simply want navigation, radio, MP3 playback and a touchscreen interface, you can probably get the hardware up and



Roadrunner is free and relies on other applications to provide services such as navigation

running for around £600 – more money spent will get you better screens, more disk space and so on.

A winning installation

Users of the Digital Car forums gathered over the late May Bank Holiday weekend in Lincolnshire for an annual rally. PCW went to take a look at some of the installations, which by and large concentrated on two areas – in-car entertainment and navigation.

Typical of the installations was that belonging to Dave Grimmer, who won the 'Best Overall' prize at the show for a system installed in his Vauxhall Astra. Based on the Centrafuse software, it includes full navigation and is linked to an OBD2 interface, allowing engine diagnostics to be displayed on screen. And, of course, there's music playback from the hard drive.

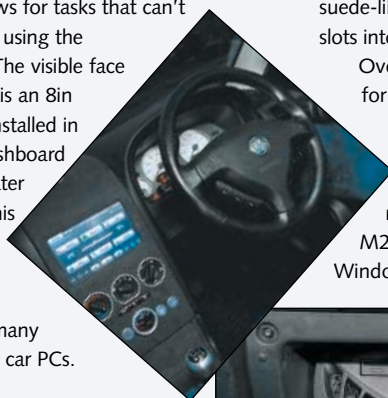
The PC is fitted into the glove compartment, where a compact keyboard allows for tasks that can't be carried out using the touchscreen. The visible face of the system is an 8in touchscreen installed in the central dashboard above the heater controls; it's this part of the setup that's the most daunting for many newcomers to car PCs.

The best thing to do, according to Grimmer, is build the PC outside of the car and make sure it all works properly before you start worrying about where to route the cables. And while you can simply screw a screen to the dashboard on a mount, a built-in look gives a more professional finish; it's worth seeing if you can buy dashboard panels as spare parts, so you'll have the original to put back in just in case.

In the Astra, work started by removing the panel from the dashboard, and the front bezel from the screen. The bezel was glued to the panel, fitted into an approximate cutout, and then most of the rest of the work was filling in gaps with car body filler and sanding down before the panel was trimmed with a suede-like fabric. When finished, the screen slots into the bezel from behind the panel.

Overall, it took around 50 hours' work for the installation. The rest of the system is relatively modest – a

Jetway main board powered by a 1.5GHz Via C7 CPU, 512MB of memory, a 120GB hard drive and an M2 DC power supply unit running Windows XP.



Above: It took hours, but the result of Dave Grimmer's installation is a screen installed in the central part of his Astra's dashboard

Right: The PC itself is tucked away in the glove compartment



The software

But what of the software? At the moment, Windows XP seems to be the system of choice for most people; it can be made to run on fairly cut-down hardware, and there's a wide range of software available for it.

Key, as we've mentioned, is the interface; you need software that works with the touchscreen display, and provides large, clear icons, so that you don't have to spend ages trying to find the right thing to press. And there are quite a few options around.

If you want a simple solution, without having to tinker, one of the best options is probably the Centrafuse package (www.fluxmedia.net). It's an all-in-one package that provides media playback, support for radio tuners, Bluetooth mobile phones, web access, multiple screens, rearview video cameras, engine diagnostics and much more. The standard version costs \$125 (around £62.50), while the Navigation version includes full European mapping and route planning for \$299.

It's also available as a bundle from European car PC supplier CarTFT (www.cartft.com) with an 8.4in touchscreen display for just under £440.

You don't have to pay for software to manage in-car entertainment, though. Another popular option is Roadrunner (<http://guino.home.insightbb.com/Roadrunner.html>), which can link to external GPS navigation tools. There's a reasonable range of navigation software for Windows, including Destinator (www.destinatortechnologies.com) and iGuidance (www.inavcorp.com).

FreeICE (www.freedrive.co.uk), which is included on this month's PCW cover disc, has a great touchscreen interface, was developed in the UK and can work either standalone –

Microsoft in your motor

Car PCs aren't, of course, the sole preserve of the enthusiast, and Microsoft has been working for a while on in-car systems. In 2000, Citroën unveiled the Xsara Auto PC, a car equipped with a Windows CE-based system that offered satellite navigation, control of a mobile phone and access to email, as well as a CD player and radio, all with voice control and the more familiar steering wheel buttons.

Today's Microsoft systems are rather more advanced, including options such as Fiat's Ecodrive, which was unveiled last year. The Ecodrive system collects data relating to fuel efficiency and pollution from the engine, and transfers it to a USB stick; drivers can then plug that into their home PC and the software will tell them what their emissions are, as well as provide hints on how to drive more efficiently.

Much of what's happening is based on Microsoft's two Windows Automotive platforms (www.microsoft.com/windowsautomotive) – Microsoft Auto 3, the reference platform, and Windows Automotive, a software toolkit car manufacturers can build on. Microsoft Auto is used by Fiat in Europe and Ford in the US. The company has also just signed an agreement with Hyundai-Kia to develop systems based on the platform.

With many navigation packages, such as Tomtom, already running on Windows CE – which is the basis of both Microsoft's car-specific

platforms – it's clearly going to be a major platform in cars, although like other implementations of CE, the hardware is likely to be very different from the sort that you can use to create your own car PC.

Just as with other areas of computing, there are alternatives to Microsoft. However, when it comes to building your own in-car system, Linux presently lags quite some way behind, especially when it comes to navigation software, which is one of the main reasons for installing a car PC. And with many sat nav systems, including Tomtom's best sellers, already built on a Windows platform, it looks likely that Microsoft will maintain its lead for some time to come.

Microsoft has two platforms for car manufacturers aiming to integrate PCs





With an interface reminiscent of the iPhone, FreeCE gives you a slick front end for your in-car PC

it will work with Silicon Labs USB radios, for example – or in conjunction with software such as Roadrunner.

In fact, much of the in-car PC software available is modular; the tools provide the

In this Audi, the speedometer has been relocated, which has given both the driver and passenger independent touchscreens



easy-to-use interface, while underneath Windows Media Player or WinAMP actually play your MP3 files.

It's also worth bearing in mind that with a PC in the background, you'll probably need to use a keyboard and pointer sometimes, even if just for troubleshooting, so a compact Bluetooth or USB keypad is essential, even if it's mostly tucked away in the boot.

Sat-nav devices, phones and entertainment are probably the easiest things to start with when you venture into the world of in-car PCs. If you want to add in-car diagnostics and your car has an OBD2 port, then you'll need a USB interface costing around £70; for more on OBD2, see *PCW* August 2007, www.pcw.co.uk/2202257.

Some of the more advanced options available, such as tyre pressure monitoring, are a little more involved, since most of the wireless pressure monitors aren't designed to interface to a PC. Therefore, adding support

The screen mount in this MR2 dashboard is a standard option available in Japan – and it fits UK models, helping to create a neat finish



to your car PC means some nifty programming and work with a soldering iron, although hopefully this will become easier in time.

Next steps

Although most of what we've looked at in this feature is based around custom PCs, don't let that put you off; one of the systems *PCW* saw at this year's Digital Car show was built with an Intel-based Mac Mini, with a touchscreen and car power supply added. And by choosing DIN-sized screens – there are even motorised units available – you can avoid having to do fiddly work fitting a car PC to your dashboard.

Whether you decide to take that simpler path or build a completely customised system that looks like it was fitted in the factory, it's definitely simpler and more straightforward than it's ever been to create a car PC to suit you. **PCW**

On this BMW, a trackpad is tucked away near the handbrake, which gives full control of the mouse when it's needed



Keep up to date

Keeping your software updated can be a real chore, but there are free programs available to help you, as Kelvyn Taylor discovers

One of the downsides of having always-on broadband connections is that software developers tend to take it for granted; install any software application these days, and it's likely it will require internet activation or registration. And, increasingly, they also install Windows services or applets that monitor the availability of software updates and patches. Given that vulnerabilities or bugs in software can be very quickly exploited by malware (so-called 'zero-day exploits'), there's no arguing about the wisdom of keeping your software up to date.

But while this is important for programs that offer frequent updates, such as anti-virus software, it's hardly an efficient use of your PC's precious resources for irregularly updated software. The cumulative effect of dozens of little updaters sitting in your System Tray can slow your PC to a crawl. In addition, these services often only check for major version updates, and rely on you to manually download patches or bug fixes. Some only run when you start the program, which can lead to frustration if you haven't used it for a while. All in all it's a bit hit and miss –

there's no standardisation as to how these services work or what they do. So, in practice, many users tend to turn them off or disable them, which is fine except that you're then leaving your PC open to the possibility of security exploits or fatal bugs.

The good news is that it doesn't have to be this way. In this short feature, we'll introduce you to a couple of interesting programs that can help you keep most of your software up to date automatically, and so help keep your PC as secure and bug-free as possible. And, what's more, it's all free.

Windows options

First let's look at keeping Microsoft products up to date. In Windows XP, you have a choice of using the built-in Windows Update or optionally using Microsoft Update; the latter adds updates for other Microsoft software. To enable this, go to <http://windowsupdate.microsoft.com> and click the 'Get Microsoft Update today' link. This will install the requisite ActiveX control on your PC. Now you automatically download all Microsoft updates via the normal Automatic Updates setting in Control Panel.

Vista doesn't use the Windows Update website, but now can include other Microsoft updates if you wish; click Start, All Programs, Windows Update, then on the 'Get updates for more products' button.

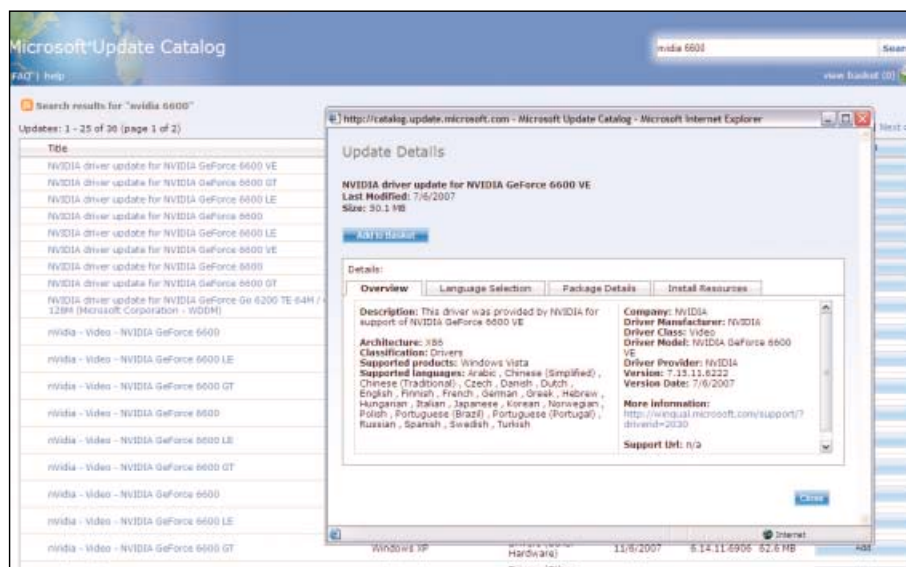
One other free tool for checking whether all your Microsoft software is up to date is the Patch Scanner add-in for PC Tools Spyware Doctor. You can download it from www.pctools.com/labs.

Driver updates

Hardware device drivers are a particular nuisance to keep up to date, as very few manufacturers supply automatic update routines. Windows Update on XP and Vista does some driver checking, but it's fairly limited and doesn't regularly update third-party drivers unless they're WHQL-certified.

However, Microsoft Update Catalog is a free searchable database of Windows hardware drivers. Just go to <http://catalog.update.microsoft.com/v7/site> and search for your hardware device. It's not perfect, as there are no advanced search options, but it does offer a vast number of driver downloads for Windows 2000, XP and Vista.

We were unable to find any free programs that scan your PC for outdated drivers and provide fixes (apart from Drivermax, see below). But there are many commercial programs, such as Version Tracker Pro (\$29.95, around £15, per year) and web-based services like Driver Agent (www.driveragent.com, \$29.95 per year) that claim to do this.

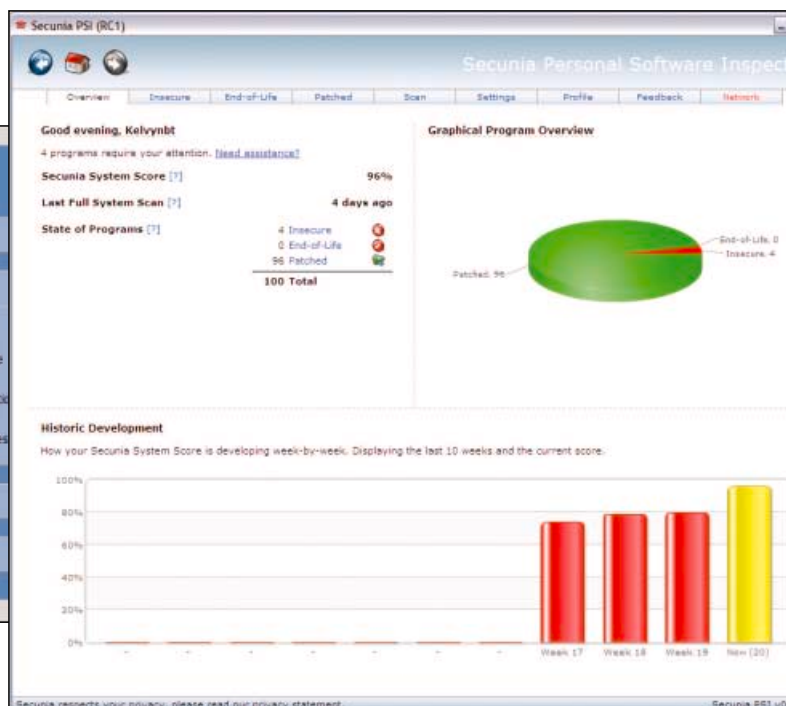


Microsoft Update Catalog is a great free source for Windows drivers, but lacks advanced search features

Below: Drivermax is a free driver scanner, but only provides updates for Windows Vista drivers



Right: Secunia PSI takes the frustration out of keeping all your software bang up to date



Many websites that offer promising free driver updates seem to be affiliate sites set up to market programs such as Driver Detective (\$29.95). There are also many subscription sites that claim to offer vast driver databases, but it seems a bit of overkill to subscribe to something you'll only use occasionally. Many of these sites are also geared towards offering hard-to-find drivers for older operating systems, rather than a true driver update service.

There is one slightly limited free tool; Drivermax (www.drivermax.com) offers free driver scans for XP and Vista, but updates are only available for Vista 32-bit systems. XP users can use the handy driver export/import and reporting features, though, which is great for Windows reinstallations. Also, you can't use the scanning feature without an internet connection, as scan results are displayed on the Drivermax website.

Update central

One handy way to manage all your software updates and patches is the Secunia Personal Software Inspector (<http://psi.secunia.com>), which is currently at release candidate 2 stage (RC2) and is free for personal use. A business version, the Network Software Inspector (£20 per PC per year), is also available from www.secunia.com, which might be of interest to advanced home network users.

Secunia specialises in providing security alerts and advisories to the IT industry. On the back of this, its database of security patches and updates is used to check if applications on your PC are up to date and secure. It also monitors whether your software is end of life, and so unlikely to receive further updates.

Secunia PSI runs as an agent in your System Tray and can actively monitor the

installation or removal of programs. It can then alert you whether the security state of any installed programs has changed as soon as Secunia issues a new product advisory. If you don't want it to do this automatically, simply set it to do manual scans, although this rather defeats the object of the program.

The interface isn't the most elegant and can be confusing, but it does the job. With the default settings, only patches and updates that can be directly downloaded are shown. So when you click the 'Download solution' button, the required file is immediately downloaded to your PC, rather than you being sent to a website to do all the work.

There is an option to show updates without a direct link – for example, Microsoft Office patches – which is recommended for expert users, but we found it pretty comprehensive even in the basic mode.

It can get a little confused, however, if programs don't uninstall properly. In this

case, you can set PSI to ignore such programs if you're certain they're not on your system.

Secunia also offers a free web-based on-demand scan (http://secunia.com/software_inspector), plus you can sign up for an email reminder service to let you know when new versions or updates relating to software on your PC are available.

Two world views

Some people insist that if your PC is stable, you shouldn't mess it up with updates. Others take the opposite stance. From a security point of view, it makes sense to keep your software up to date, as new updates are generally fixing known bugs or flaws.

At the very least, we believe you should make an effort to keep aware of what updates are available and why they've been released. The tools we've described here should hopefully make that a much simpler and less frustrating task. **PCW**

Coming soon...

Later this summer, vnunet.com (which powers the PCW Downloads section at www.pcw.co.uk/downloads) will be launching a new service to bring the latest software downloads and promotions to your desktop. Although not a patch management tool like the other programs we've looked at here, it will enable you to create a wish list of watched applications, read the latest software reviews via our Download Junky blog, and view our most popular downloads and recommended applications.

You'll be able to pay a yearly subscription and have the additional facility to download programs directly from PCW using our fast and guaranteed servers, as well as receive full commercial applications before regular users and take advantage of unique subscriber-only discounts and promotions on commercial software.

The tool will differ from other commercial 'updater' applications in that it leaves control firmly in your hands, rather than simply scanning your installed applications and attempting to automatically push new paid-for versions at you.



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There are many software security solutions to choose from but only one can actually think.

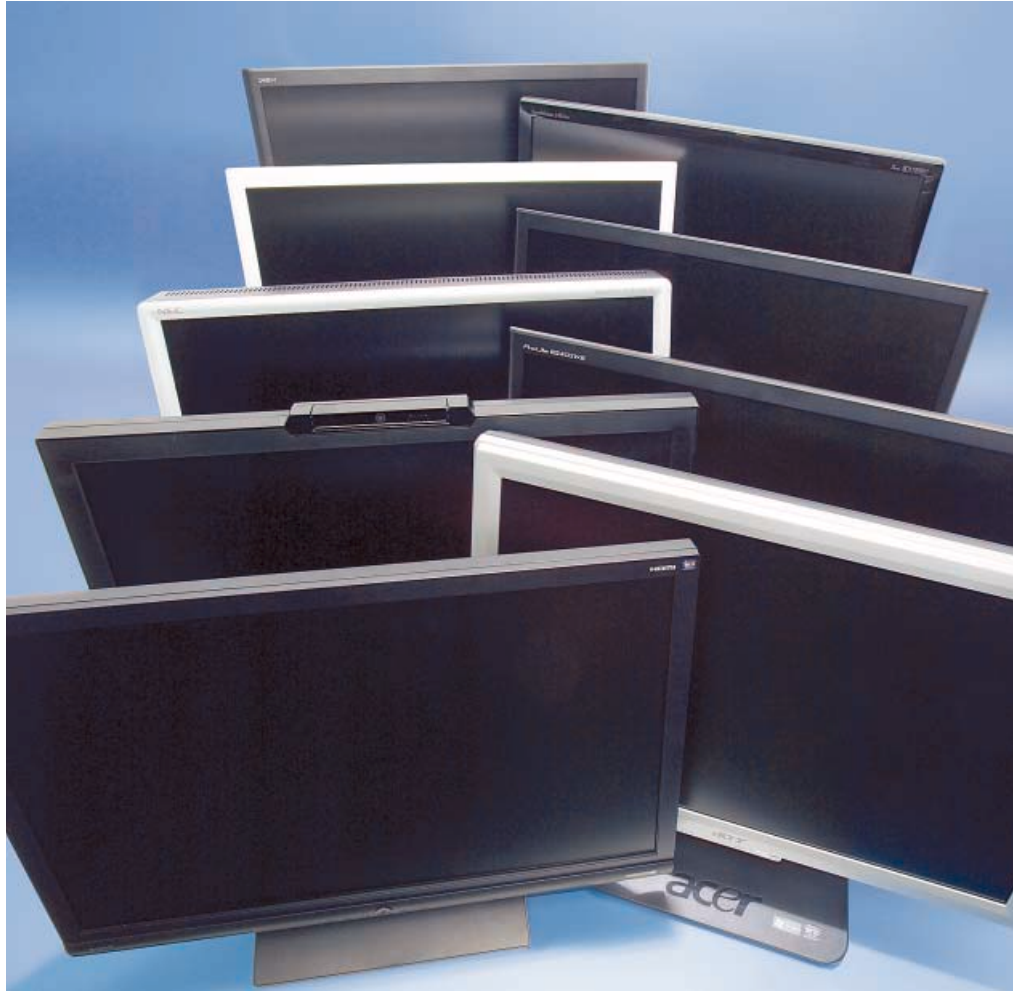
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Editor's Choice

'We're now able to bring you a group test of nine displays that can give you a productivity boost without breaking the bank'

Dazzling displays

Prices have plummeted so far that 24in TFTs can now be picked up for less than £300, as Paul Monckton discovers

Many of us will appreciate the added productivity and enjoyment that a large monitor can bring. Viewing multiple documents side by side cuts down on swapping between windows, while games become more immersive, and they can double up as a multimedia display for sitting back and taking in a movie.

Improvements in panel technology (see www.pcw.co.uk/2149165) and economies of scale in the booming LCD TV industry have brought 24in monitors within the reach of more users than ever.

With most manufacturers now offering affordable entry-level models, we're now able to bring you a group test of nine displays that can give you a productivity boost without breaking

the bank. All of these displays offer screen dimensions of 1,920x1,200 pixels, which allows for playback of 1080p HD content at its full native resolution. This is facilitated by widespread use of HDMI ports, which are now replacing DVI connectors on consumer models.

Many displays come supplied with height-adjustable stands, allowing for comfortable use throughout the working day, while others come with professional-grade colour reproduction. Large displays are great for games too, so look for a fast response time and good, bright colours. We've tested all these displays for quality, power consumption and features, allowing you to select the one that is best suited to your needs.



Acer AL2416

Price £269.08 Contact Acer 0870 853 1005 www.acer.co.uk



Acer's AL2416 is an aggressively priced display that uses a bright, high-quality panel capable of displaying stunning images. However, it's also unique in this group test in offering only a single input – the standard VGA connector.

Keeping things analogue gives the monitor a key advantage over its rivals – price. However, the disadvantages of a VGA connection are manifold: image quality is reduced considerably by the additional circuitry

required to lock onto the analogue signal from your PC, and this lock can deteriorate over time, resulting in a loss of sharpness and detail. Furthermore, it's harder to set up the monitor for the optimum display of light and shade, resulting in a loss of contrast and often colour fidelity.

The quality of the components used in this display delivers very good colour response and contrast, but next to the other monitors, it's easy to see where the AL2416 is losing out on sharpness. It is available in a version with an additional DVI port for an extra £25, and we would suggest that you seriously consider paying this because, in many respects, it is a superior product to many more expensive alternatives.

When it comes down to style, the AL2416 is somewhat lacking. It's far from ugly, yet it lacks the sleekness and smoothness we've seen in its competitors – the bevelled silver bezel certainly doesn't help.

With a price this low, you wouldn't expect many extras and this model comes with a standard tilt-only stand and is devoid of USB ports or speakers. However, you do get a selection of viewing presets that can tame its powerful brightness for comfortable, readable text, or ramp everything up full tilt for an exciting gaming or video experience. But without the digital input, you won't be viewing any HDCP-protected HD content or hooking up an HDMI-equipped gaming console.

Verdict

Pros Price; brightness; colour response; contrast

Cons Analogue-only; no HDCP and reduced sharpness; lacking in features

Overall A low-cost option with surprisingly good performance, but lacking any form of digital input and, therefore, of limited use in multimedia applications

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Asus MK241H

Price £343 Contact Asus 020 7631 2020 <http://uk.asus.com>



The MK241H from Asus immediately stands out. Its styling is unlike any other monitor we've seen, with its straight edges and metal trim giving it a look that's a million miles from the gentle, minimalist lines we're used to. Easy on the eye it isn't – it's a brave, bold look that you'll either love or hate.

Whether or not you like the way it looks, with a rated brightness of 450 cd/m², you'll have no difficulty picking out every nuance of on-screen detail, whatever

the prevailing light conditions. However, where this monitor really stands out is in the realm of colour.

Its wide gamut display delivers redder, greener and bluer colours than any other monitor in this group test – and by quite a considerable margin. Fire up a game on this screen and you'll really notice the difference.

This is great if bright, bold colours are your bag, but not so good if you're after some semblance of reality, because unless the monitor is properly calibrated, real life just isn't quite as red, blue or green as this display would have you believe. In short, colours can often seem rather overdone.

With the correct colour profiling, however, this is a display that will be able to faithfully reproduce shades well out of the reach of lesser displays.

You do pay a little more for this, but the build quality is solid, the monitor has three inputs, including HDMI, and you get a built-in webcam and microphone.

Although packed with features, the most notable omission for business users will be the lack of a height-adjustable stand. There are better choices for general or business use, but gamers will love this a display – if they can afford it. While the wide gamut may appeal, it's best left to those who know how to tame it.

Verdict

Pros Wide colour gamut will suit gamers; brightness; webcam and microphone; HDMI

Cons Needs to be correctly calibrated; no height adjustment or USB

Overall A very impressive display, but the wide colour gamut needs taming with calibration before use with colour-critical applications

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Belinea o.display 4

Price £299 **Contact** Belinea www.belinea.com



Bearing more than a passing resemblance to Iiyama's B2403WS, Philips' 240BW and V7's D24W33, the Belinea o.display 4 distinguishes itself by its cheery, bright white exterior. However, closer inspection reveals an almost identical stand and panel casing in all four models.

A choice of generic casing need not necessarily imply identical internal components. In the B2403WS, Iiyama has selected a slightly higher specification of

panel and Philips has used its own (and we think much better) on-screen menu system. There is, however, precious little to distinguish this Belinea from the V7 display other than a slightly higher cost, which may be cancelled out at street-level pricing.

In general use, the white casing creates a strong feeling of spaciousness and relaxation compared to its black counterparts, although it's sure to show up grubby marks a lot quicker. Despite the low price, the monitor doesn't skimp on features. A full range of stand adjustments, including portrait mode rotation, comes as standard as well as both VGA and HDMI inputs.

It's a fast, 2ms display with a dynamic contrast ratio of up to 3,000:1, but both the overdrive circuits and the dynamic contrast enhancements can be turned off in the on-screen menus according to your preference.

Other than the PDF documentation, no advanced software is included, which is good as the supplied CD failed to install on our Windows Vista test system.

This display represents very good value for money while retaining many features you'd expect to find on premium products. However, with the V7 display available for slightly less and Iiyama's technically superior model costing the same, we'd advise shopping around for the best price and choosing the one that offers you the best deal you can find.

Verdict

Pros Price; adjustable stand; dual inputs

Cons Lack of software; average performance

Overall A good budget purchase, but almost identical to some others you may find available for less

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Benq G2400W

Price £289 **Contact** Benq www.benq.co.uk



Despite housing a 24in screen, the G2400W from Benq looks smaller than it should. Dwarfed by the competition, its tiny frame seems too thin and compact. The upshot is that Benq has managed to create a 24in monitor that won't consume the whole of your desk space, nor will it dominate your room.

This weight reduction is achieved partly through the shedding of non-essentials: there are no speakers, USB ports or height-adjustable stand – you'll have to make

do with a small hinge-like protuberance to give it some tilt. And there are most definitely no webcams or microphones hidden away in the chassis.

Thankfully, all the important features are still there. You get the flexibility of three inputs, including HDMI with all the aspect scaling options you need to cope with various inputs such as games consoles and Blu-ray players.

Other than the power switch, all control buttons are hidden below an exceptionally thin bezel. Unfortunately, the legends are hard to read and so operating the on-screen menu can take some getting used to.

Once you've mastered the controls, though, you'll find a selection of display modes suitable for various tasks, such as movie playback, photo editing, sRGB mode and a dynamics mode, which enables the display's dynamic contrast. If you're in any doubt over which mode to use, a split-screen option allows you to view the display with the adjustment applied on one half of the screen only to help you select the most pleasing image.

We found no obvious problems with display quality, but nothing outstandingly good either. It's available at a low price, but for just a little more, you can get a monitor with a height-adjustable stand and built-in speakers. However, if you have limited desk space and want a neat, compact monitor, the G2400W is a great choice.

Verdict

Pros Compact size; three inputs; flexible scaling

Cons Small tilt-only stand; no speakers; no USB

Overall A great budget purchase with beautifully compact proportions, but lacking in ergonomic adjustments

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Iiyama B2403WS

Price £299.60 **Contact** Iiyama 0870 224 9595 www.iiyama.co.uk



One of three almost identical-looking monitors in this group, Iiyama's B2403WS offers a good balance of features and performance. At first glance it may be indistinguishable from V7's D24W33 or the Philips 240BW, but it is quite different internally.

With a 300cd/m² panel providing an extra 20 per cent brightness and slightly increased viewing angles, the B2403WS appears to have a small performance advantage at roughly the same price. When compared

to the Belinea and V7 products, Iiyama's display certainly does come out ahead; our tests revealed it is measurably brighter. With all controls, on-screen menus and stand capabilities being equal, the B2403W proved itself to be a superior product compared with the other two. However, the increased brightness didn't result in the best improved contrast ratio, as the slightly more expensive Philips 240BW produced a considerably deeper black level.

While it may not be the least expensive monitor of the group, it comes with an ergonomic tilt, swivel, pivot and height-adjustable stand, which you won't get from budget models such as the Acer AL2416. This makes it far more comfortable for prolonged work use, while retaining gamer-friendly features such as a fast response time and dynamic contrast. Usefully, both the dynamic contrast and overdrive circuits can be turned off to improve the quality of static images, but the on-screen menu uses rather unhelpful abbreviations, such as OD and DCR, to refer to them.

HDCP support and a variety of scaling modes means this monitor is equally at home displaying high-definition multimedia content without any unnecessary stretching or cropping of the picture.

The B2403WD offers a good balance of performance and features, and is suitable for a wide range of uses.

Verdict

Pros Price; 300cd/m² panel; fully adjustable stand; HDMI

Cons Contrast ratio; colour accuracy

Overall A well-balanced product at a good price with ergonomic features

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

NEC 2470WNX

Price £468.83 **Contact** NEC 020 8993 8111 www.nec-display-solutions.com



If you make a living from the images you create on your PC, or you want the highest possible quality, then the NEC 2470WNX stands head and shoulders above the rest in this test.

With its S-PVA (Super Patterned Vertical Alignment) panel and superb build quality, this is a professional-grade product with a price to match. It delivers unbeatable brightness and contrast and, more importantly, almost flawless colour reproduction. Even the best of the

TN-based panels require calibration to achieve any degree of colour accuracy, but the 2470WNX delivered almost perfect results even uncalibrated.

Its wider, 176° viewing angles also ensure that brightness and colours don't appear to shift towards the edges of the screen, and rotating the panel into portrait mode causes no degradation in uniformity.

As this is aimed at serious design and photographic work, some of the more multimedia-friendly features have been omitted. There are no built-in speakers, for example, although an optional speaker dock is available as an extra, nor is there an HDMI input.

The monitor is thick, heavy and imposing, with a correspondingly well-built stand. However, NEC's designers have maintained a stylish look with a rather thin bezel, and the stand's rear casing can be temporarily removed, allowing you to thread through your connecting cables before concealing them entirely.

Four control switches protrude beneath the bezel, complemented by a tiny joystick button that lets you navigate quickly through the on-screen menus. There are two concealed USB ports at the rear and another pair on the right-hand side of the bezel. The Naviset software will allow you to configure the display directly from a PC.

If you are more into Photoshop than gaming, the NEC 2470WNX is well worth the extra money.

Verdict

Pros Image quality; build quality; colour accuracy

Cons Price; high power consumption; no HDMI

Overall A high-performance monitor at a premium price – ideal for serious photographers, but wasted on gamers and spreadsheet junkies

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Philips 240BW8

Price £309.95 **Contact** Philips 0870 900 9070 www.consumer.philips.com



Although its external appearance is very similar to the Belinea, Iiyama and V7 models, the Philips 240BW8 has a few important differences. Priced fractionally higher, it has its own much improved on-screen menu system, along with rather different performance characteristics.

Although its specification is broadly similar to its closest rivals, our test results revealed better colour accuracy during calibration tests, beating even

Samsung's 2493HM. If you're in the business of web design or occasional photo editing, this monitor will do a good job at a considerably lower cost than a display such as NEC's 2470WNX.

It's missing an HDMI socket, although HDCP is supported by the DVI port, so high-definition movie playback is possible. A VGA socket is also provided for legacy analogue connections.

Rated at 5ms, it lacks the overdrive control used on many competing displays to boost the response time to 2ms. A dynamic contrast option is also absent, but this is no great loss. The monitor is limited in brightness and, although it's excellent for office use, you may find it lacks punch compared with more expensive displays.

With its height-adjustable stand that also pivots into portrait mode, the 240BW8 has all the ergonomic features you'll need for office use. Philips' Smartcontrol software takes you through every aspect of the setup. It also includes a quick calibration utility to ensure you get the very best out of the display.

Despite having only minor differences to much of the competition, the 240BW8 achieves a more professional feel and is better suited to editing photos or any application where on-screen colours need to be accurate. Business users may also prefer the DVI socket, due to the higher availability of connecting cables.



Verdict

Pros Accurate colour; HDCP; support software

Cons No HDMI or USB; no dynamic contrast

Overall Superior on-screen menus, useful utility software and good colour reproduction make this an excellent all-round choice

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Samsung SM2493HM

Price £420 **Contact** Samsung 01932 455 000 www.samsung.com/uk



Undoubtedly one of the most stylish 24in monitors we've seen, the Samsung SM2493HM's expensive looks come with a price to match. At around £100 more than most displays here, you'd be right to expect something a little special.

With its glossy piano-black finish, subtle silver trim and superior build quality, it impresses even before it has been plugged in and switched on. Like many displays in this group, it features a full range of tilt,

swivel, pivot and height adjustments, but feels smoother and more solid. It's fitted with a trio of video inputs and the stand incorporates a convenient two-port USB2 hub.

Not wanting to mar the sleek bezel with buttons, Samsung has replaced them with a row of touch-sensitive controls that are operated by brushing a finger over their respective legends. While this looks great, it's considerably harder to use these controls than regular buttons, and they can rapidly become quite frustrating if the lighting is such that you can't see them properly.

Once inside the menu system, you'll find a wealth of configuration options. Brightness presets, called Magic Bright, provide easy switching between text, internet, game, sport, movie and dynamic modes, while Magic Color provides similar control over colour options, and Demo Mode helps you choose your preferred option. As if these weren't enough, there are also effects such as greyscale, green and sepia tints available, although we really can't see the need for them.

Brighter than all but the more expensive 2470WNX from NEC, this display provides great contrast – even without the use of its 10,000:1 dynamic contrast mode. It also displays a very wide range of colours, although nowhere near the gamut of Asus' MK241H. Colour rendition is also pleasingly accurate, but is outclassed in this respect by the Philips and NEC models.

Verdict

Pros Build quality; luxurious feel; brightness; stand adjustments; USB hub; inputs

Cons Price; frustrating control buttons

Overall A high-quality, stylish and good-looking monitor with great performance, but at a higher price

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

V7 D24W33

Price £279.99 Contact V7 www.v7-world.com



Having scrutinised the competition from Belinea, Iiyama and Philips, it is with a sense of déjà vu that we turn our attention to the D24W33 from V7. Sharing the same physical design as the others, the most distinguishing feature of the V7 is its price. Quoted at around £20 less than the others, the D24W33 is an immediate winner on value for money.

Its panel isn't as bright as Iiyama's and it doesn't have the improved colour accuracy of the Philips

monitor, but the majority of users won't care. This is a competent, feature-rich product at an excellent price.

With both VGA and HDMI connectors as standard, the D24W33 is versatile and can cope with high-definition sources thanks to its flexible scaling options.

It costs less than Benq's G2400W and has the advantage of an ergonomic height-adjustable stand with pivot capability and built-in speakers. While its performance may be slightly below average, it would be more than acceptable for most users looking for a good general-purpose display that won't break the bank.

Only one display here costs less – Acer's AL2416. When properly set up, the AL2416 is capable of much higher quality than the D24W33 and is better suited to colour-critical work, but crucially it lacks any form of digital input and is fitted with only a basic stand.

The V7's on-screen display is identical to that found on the Iiyama and Belinea displays, and suffers from the same unhelpful menu system. But given the low price, this is perhaps something we can live with.

If you're after a boost in productivity and your primary reason for buying a 24in monitor is the extra screen space, you can't go wrong with the V7 D24W33. If you want to edit photographs, then consider spending a little more or perhaps forgoing the digital input and choosing Acer's AL2416.

Verdict

Pros Price; HDMI; ergonomic stand

Cons Performance; no USB

Overall Superb value for money and a good set of features make this a compelling option for the user who isn't too fussed about getting the highest image quality

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

How we tested

To evaluate each monitor's performance, we viewed a variety of sources, including photographs, text and video. These subjective evaluations were complemented by a full calibration procedure using a Spyder2 Pro, which also allows us to measure brightness and contrast directly.

These measurements are often lower than the manufacturers' specifications because they are taken once the monitors have been set up correctly to display an optimum image capable of reproducing all shades of grey, rather than simply turning up the brightness to maximum. When attempting to display black, a monitor's backlight is still enabled, so some light is bound to leak through. We measured just how dark the monitor can go by displaying a full black screen and measuring the light output with the Spyder calibrator.

The contrast ratio is calculated by taking the measured brightness of a full white screen and dividing that value by the brightness of a full black screen. Displays with higher contrast ratios appear sharper and easier to read, as there is a clearer differentiation between light-coloured document pages and dark-coloured text.

By measuring the colour co-ordinates of red, green and blue, we calculated the full range of displayable colours, also known as the gamut. Gamut figures for monitors are usually expressed as a percentage of the gamut of the NTSC colour standard, which is usually wider than that of most desktop monitors. The bigger the percentage, the greater the range of colours the monitor can display.

A larger gamut is great if you want to reproduce more real-world colours accurately. If you use a high-quality digital camera, then you may have an Adobe RGB colour mode available. Most monitors can't



The Spyder2 Pro calibration device complemented our subjective tests

display all the colours available in Adobe RGB, but monitors with a wider colour gamut will come closer to displaying the full range.

With energy prices constantly rising, we've also measured the power consumption of each display, both at its maximum brightness and at 80cd/m² – the latter is the brightness specified by the sRGB display standard.

The monitors from NEC and Asus were unable to get as low as 80cd/m², so we tested them with the brightness set to minimum; around 100cd/m². It's interesting to note the huge power savings that can be achieved by turning the brightness down a small amount.

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24in TFT monitors

				
MANUFACTURER	ACER	ASUS	BELINEA	
Model	AL2416	MK241H	o.display 4	
Price	£269.08	£343	£299	
Sales telephone	0870 853 1005	020 7631 2020	N/A	
URL	www.acer.co.uk	http://uk.asus.com	www.belinea.com	
SPECS				
Panel size (diagonal)	24in	24in	24in	
Aspect ratio	16:10	16:10	16:10	
Tilt/Swivel/Height/Pivot adjustment	✓/✗/✗/✗	✓/✓/✗/✗	✓/✓/✓/✓	
Native resolution	1,920x1,200	1,920x1,200	1,920x1,200	
Panel technology	Advanced PVA	TN	TN	
Claimed number of colours (millions)	16.7	16.7	16.7	
Claimed grey-to-grey pixel response time	5ms	2ms	2ms	
Claimed viewing angles (horizontal/vertical degrees)	160/160	170/160	160/160	
Claimed contrast ratio (std/dynamic)	1,000:1/N/A	1,000:1/3,000:1	1,000:1/3,000:1	
Claimed brightness (cd/m²)	400	450	250	
Image presets	User/Text/Standard/Graphics/Movie	Five colour temperatures	5,400/6,500/9,300/sRGB/Supervisor	
Vesa 100 mount	✓	✓	✓	
Speakers	✗	2 x 2W	2 x 2W	
Headphone socket	✗	✓	✓	
HDCP support	✗	✓	✓	
PORTS				
VGA connector/cable	✓	✓/✓	✓/✓	
DVI connector/cable	✗/N/A	✓/✓	✗/N/A	
Component video/cable	✗/N/A	✗	✗/✗	
Composite video/cable	✗/N/A	✗	✗/✗	
HDMI/cable	✗/N/A	✓/✗	✓/✓	
Other connectors	✗/N/A	Audio	Audio	
Warranty	3yrs	3yrs	3yrs	
Weight (kg)	9.1	8.2	8.7	
SCORES				
Features	★★★★★	★★★★★	★★★★★	
Performance	★★★★★	★★★★★	★★★★★	
Value for money	★★★★★	★★★★★	★★★★★	
OVERALL	★★★★★	★★★★★	★★★★★	

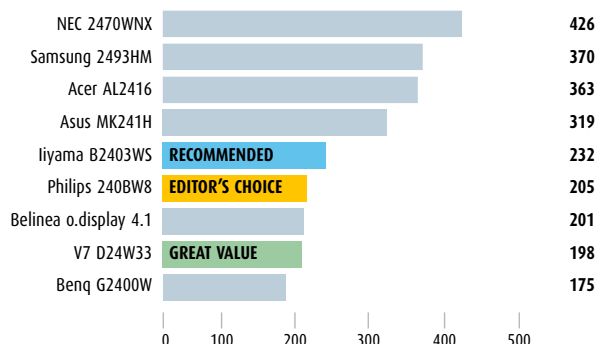
						
	BENQ	IYYAMA	NEC	PHILIPS	SAMSUNG	V7
	G2400W	B2403WS	2470WNX	240BW8	SM2493HM	D24W33
	£289	£299.60	£468.83	£309.95	£420	£279.99
	N/A	0870 224 9595	020 8993 8111	0870 900 9070	01932 455 000	N/A
	www.benq.co.uk	www.iiyama.co.uk	www.nec-display-solutions.com	www.consumer.philips.com	www.samsung.com/uk	www.v7-world.com
	24in	24in	24in	24in	24in	24in
	16:10	16:10	16:10	16:10	16:10	16:10
	✓/x/x/x	✓/✓/✓/✓	✓/✓/✓/✓	✓/✓/✓/✓	✓/✓/✓/✓	✓/✓/✓/✓
	1,920x1,200	1,920x1,200	1,920x1,200	1,920x1,200	1,920x1,200	1,920x1,200
	TN	TN	S-PVA	TN	TN	TN
	16.7	16.7	16.7	16.7	16.7	16.7
	5ms	2ms	6ms	5ms	5ms	2ms
	160/160	170/160	176/176	160/160	160/160	160/160
	1,000:1/N/A	1,000:1/2,000:1	1,000:1/N/A	1,000:1/N/A	1,000:1/10,000:1	1,000:1/Not specified
	250	300	500	250	400	250
	Reddish/sRGB/Bluish/ User	6,500K/7,500K/9,300K/ User	Six presets/sRGB/Native/ User	Cool/Warm/sRGB/ User	Magic Color/Magic Bright/Magic Tune	6,500K/7,500K/9,300K/ User
	✓	✓	✓	✓	200x100mm	✓
	x	2 x 2W	Optional 20W soundbar	2 x 2W	2 x 2W	2 x 2W
	x	✓	x	✓	✓	✓
	✓	✓	✓	✓	✓	✓
	✓/✓	✓/✓	✓/✓	✓/✓	✓/✓	✓/✓
	✓/✓	x/N/A	✓/✓	✓/✓	✓/✓	x/N/A
	x/N/A	x/x	x/x	x/x	x/N/A	x/x
	x/N/A	x/x	x/x	x/x	x/N/A	x/x
	✓/x	✓/✓	x/N/A	x/N/A	✓/x	✓/✓
	x	Audio	USB	Audio	USB	Audio
	3yrs	3yrs	3yrs	3yrs	1yr	3yrs
	6.15	8.7	12.4	8.8	8.33	8.7
	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
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	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★

Lab results

The NEC scored well in the brightness and contrast tests, while the Asus beat all the other monitors tested when it came to colour gamut percentage

Measured brightness in cd/m²

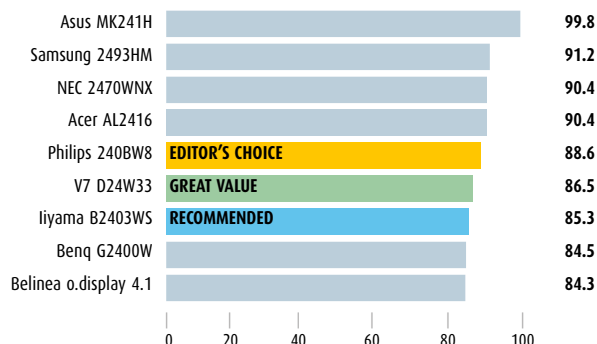
Bigger is better



NEC's screen performed best when we measured each model's maximum brightness; the result of 426cd/m² is almost 2.5 times that of the Benq. However, keep the NEC at its highest brightness setting and you'll pay the price, as its power consumption at this level is 87W.

Measured colour gamut percentage (NTSC)

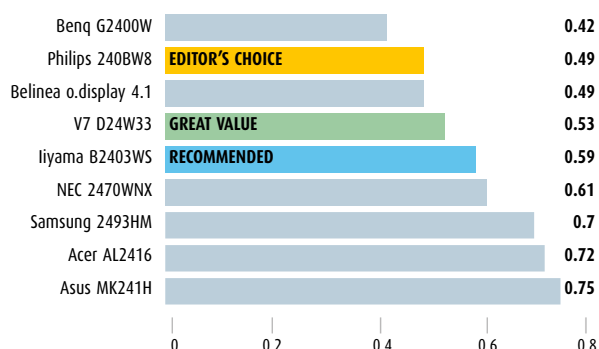
Bigger is better



Asus' TFT performed well, managing to display 99.8 per cent of the entire NTSC colour gamut. No other screen could get close to this, with the Samsung coming second place with 91.2 per cent. However, only high-end users who calibrate their screens will really notice the difference.

Measured black level in cd/m²

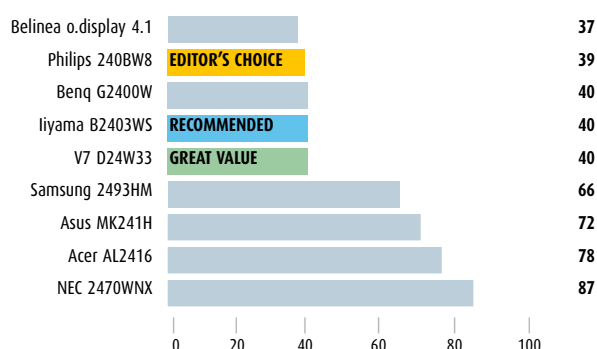
Smaller is better



Bright, vivid colours are important, but so are blacks. Here we measured the brightness of each screen when displaying total black – the ideal level being zero. Benq led the pack and the NEC's 0.61cd/m² is impressive considering its maximum brightness of 426cd/m².

Power consumption in watts – maximum brightness

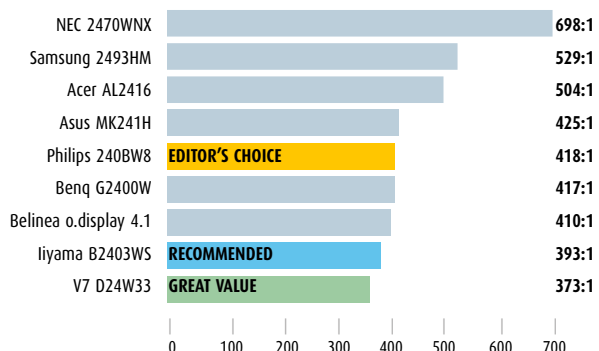
Smaller is better



Displays can use a lot of power and the Samsung, Asus, Acer and NEC models all drew more than 60W in this test. The Belinea was the least power-hungry device, drawing just 37W at maximum brightness. Although the NEC drew the most, it had the highest measured brightness.

Calibrated contrast ratio

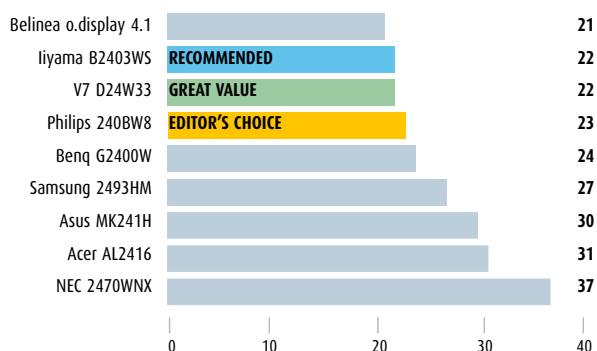
Bigger is better



Using the Spyder2 Pro calibration device, we measured each screen's contrast ratio. The NEC won this test returning a contrast ratio of 698:1. The inexpensive V7 performed worst in this test, meaning high-contrast applications, such as word processors, won't look quite so sharp.

Power consumption in watts – 80cd/m²

Smaller is better



It's interesting how much energy is saved with the brightness turned down to 80cd/m² – some screens required just half the amount of power compared to the maximum settings. Both the NEC and Asus models couldn't get as low as 80cd/m², and were therefore measured at their lowest possible setting.

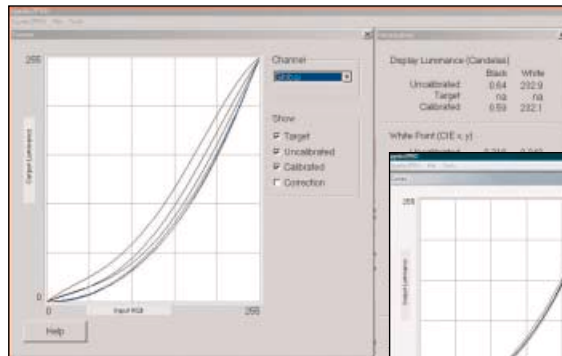
Colour calibration

The latest crop of Twisted Nematic (TN) TFT panels offer excellent value for money and bring larger screen sizes within the reach of most budgets. Specifications such as high brightness and fast response times in particular are used to differentiate these products.

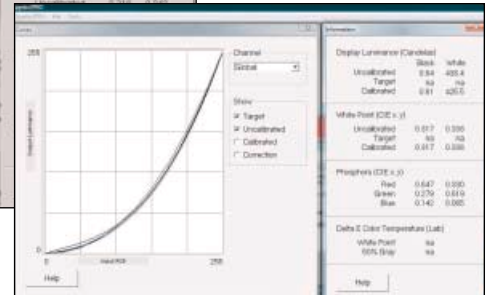
While these are all valid concerns, little is mentioned about colour accuracy. Whether you're publishing printed material, tweaking photos to put online or watching a movie, getting the right colours on screen can make a big difference. If you've ever tried printing out a photo and compared it with how it looks on screen, you'll know exactly what we mean.

Some better-equipped displays, such as Philips' 240BW8, come with calibration software to adjust your display by eye. While utilities like these help, if you're serious about getting the best colour possible, you should invest in a hardware calibrator. For personal use, these range in price from around £75 for a Pantone Huey (www.pcw.co.uk/2190849) to approximately £145 for a Datacolor Spyder3 Elite (www.pcw.co.uk/2206000). The images on the right show calibration results generated with a Datacolor Spyder2 Pro.

For each primary colour, input signals in the range of 0 to 255 should result in smooth transitions from black to full brightness. The thin



Although by no means bad, Iiyama's B2403WS struggles to reproduce totally accurate colour



The NEC 2470WNX performs better, with almost perfect colour reproduction

curve in the graph represents the ideal output for a perfectly calibrated display. In real life, this is almost never achieved. The red, green and blue curves represent the measured colour output from a real monitor.

Professional displays, such as the NEC 2470WNX, come close, but most budget displays don't. The further away from the blue curve each one gets, the more inaccurate the displayed colour becomes. By creating a profile of your monitor's response curves, calibration allows your PC to compensate for its inaccuracies and bring the curves back into line.

Editor's Choice

Editor's Choice Philips 240BW8

Recommended Iiyama B2403WS • Great Value V7 D24W33



Philips 240BW8



Iiyama B2403WS



V7 D24W33

The variety of features available across this range of displays could make your purchase decision a little more complicated than simply finding the 'best' monitor. Now that prices have fallen considerably, many types of user are in the market for a 24in display with different purchasing criteria.

If you want a display for design work or any task that requires accurate colour reproduction, you should consider spending the extra money on a PVA-based panel, such as NEC's 2470WNX. It costs a lot more, but will save you money in the long run as you'll be able to get colours right first time around. If your budget won't stretch that far, then the 240BW8 from

Philips does a remarkably good job for its price, albeit with a somewhat reduced specification.

Alternatively, if you're happy to use an analogue connection, Acer's AL2416 can save you a lot of money and deliver very good quality if you take the time to set it up properly

For general work, your principal consideration is the size of the display. As long as image quality is adequate, you'd be best to choose ergonomic features in preference to high brightness panels or dynamic contrast capabilities. V7's D24W33 is an excellent value purchase for this purpose.

For gaming and multimedia, you won't need precision colour and may well be able to make

do without an ergonomic stand. Instead, features such as dynamic contrast, fast response times and multiple inputs with aspect ratio scaling will become more important. Benq's G2400W and the Asus MK241H are both good choices.

This makes choosing an overall winner rather difficult, but a Great Value award goes to V7 for making the D24W33 a good all-rounder at such a low price. For a little more money, Iiyama's very similar B2403WS delivers slightly better image quality and scoops a Recommended award.

Our Editor's Choice award goes to the Philips 240BW8. While you can pay less for a display, the 240BW8 offers better colour fidelity and comes with useful setup software. **PCW**



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Web vaults

Online storage services are booming and you can get 50GB absolutely free. Will Stapley checks out six of the best services

It wasn't so long ago that MSN Hotmail was considered generous in offering 2MB of web space to store your emails. Things have changed a fair bit since then, and you can now pick up a whopping 50GB of online storage without paying a penny.

Having an online vault where you can store files certainly has its advantages, not least that you can access your documents, photos, videos and other files from any internet-connected PC. You can also use them as a backup service, so if your PC is damaged or stolen, all your important files will remain safe and sound – some even offer automatic backup tools. Other benefits include file-sharing facilities, so you can quickly share your photos with friends and family.

There are, of course, some disadvantages. Depending on the speed of your internet connection and that of your chosen storage company's servers, you could end up waiting a long time for large files to be transferred. You've also got to take into account that if the company goes out of business, you could end up losing all the data you've uploaded. The most sensible course of action is to make sure you've got physical backups of any important data. You could also sign up to two or more free services, duplicating your data across them, although this will obviously increase the time it takes to upload your files.

You also need to be careful about exactly what you're uploading. If the storage company deems it to be illegal or inappropriate, it may decide to disable your entire account, which could end up with you losing all your data. The likelihood is that you'll be given a warning and, if your account is closed, an opportunity to recover your data, but there's no guarantee.

Adrive

Offering a staggering 50GB of free storage for all users, Adrive tops the tables in terms of allowance. And, unlike with some other services, there are no restrictions on how you use it.

The sign-up process is a bit more in-depth than most would like, requiring you to enter a fair amount of personal information, including a phone number, address and postcode. Once you've registered, files can be uploaded via a simple form or a drag-and-drop interface. You can also drag entire folders into your storage space, with the folder structure remaining intact. However, as with many others, the file transfers aren't made using a secure connection, so you may want to think twice about uploading sensitive documents.

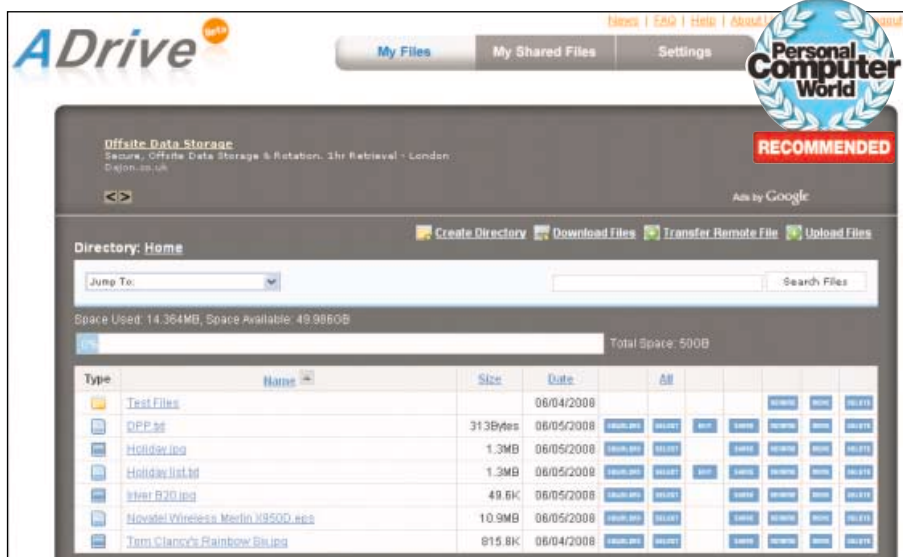
According to the support section on the Adrive website, transfer speeds aren't limited in any way, but during our tests the download speeds certainly behaved as if they were capped – hovering at 100Kbytes/sec. The upload average of 82.6Kbytes/sec was also a little disappointing.

Adrive's strength is undoubtedly the 50GB of free storage available. There are few extra features to play around with, but it's easy to use and would suit those looking to store or back up their media collection.

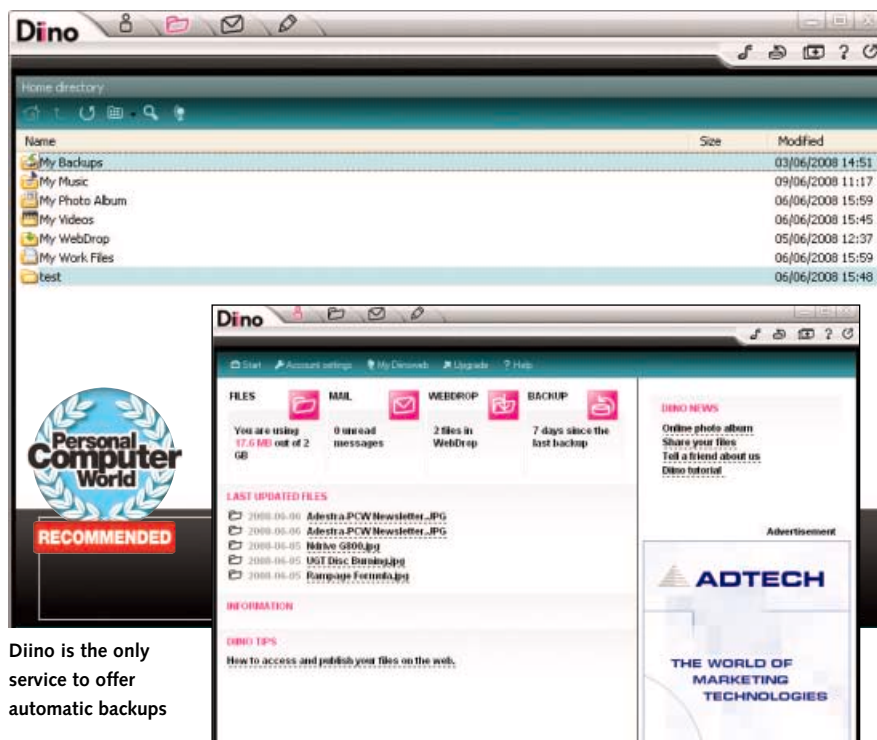
Diino

With its relatively modest 2GB of storage space, Diino isn't aimed at those looking to store a heap of video files. File transfers are primarily made via a desktop client, which can be downloaded from the Diino website. Entire folders can be selected for upload and encryption ensures they're safe during transfer.

Another advantage of the desktop client is that it can be scheduled to run automatic backups for specified folders.



Adrive tops the table in terms of allowance, offering 50GB of free storage to all its users



Diino is the only service to offer automatic backups

You can also access files stored on Diino using a web-based interface, but you first need to flag each folder as having web access via the desktop client. Files transferred using the web method don't benefit from encryption.

There's a 500MB-per-day transfer limit, but since this is one-quarter of the total space, it's very unlikely you'll exceed it. Mac users will be disappointed to hear that the software is Windows-only at present.

We were impressed with Diino's average transfer speeds. It was second only to Humyo for uploads and managed to top the tables for downloads by some way at 738Kbytes/sec.

Its small amount of storage limits Diino's appeal, but the desktop client makes it simple to transfer files and it's the only service on test here to provide the option of automatic backups.

Divshare

Most users will be perfectly happy with the 5GB of free storage offered by Divshare. Files can be uploaded using a form or, as with many other services, a drag-and-drop method. Divshare will also convert video files to Flash, allowing you to embed them on other web pages – you can turn off this automatic conversion if you prefer your files to stay in their original format.

Divshare tries to persuade users to upgrade to a paid-for version by placing a 100Kbytes/sec limit on the download speed. However, the restriction that will cause some users problems is the 200MB maximum individual file size. With that said, if you're planning on uploading much larger files, you'll soon run out of space anyway.

You're given a 50GB download limit each month – exceed this and you'll only be able to access your files by waiting for the next 30-day

period to start or by upgrading your account. Although multiple files can be uploaded using the drag-and-drop interface, folders aren't recognised. This means you'll have to collect all your files into one folder if you want to upload them in one go.

Any video, music or photos you upload will be playable on the website using the Divshare media player.

Humyo

With its servers located in a former Bank of England gold bullion vault, you can be reasonably sure files stored with Humyo are safe from physical attack. However, unless you upgrade to a paid-for service, they won't be encrypted during transfer.

A total of 30GB is available for free, which means the Humyo beats all but the 50GB Adrive



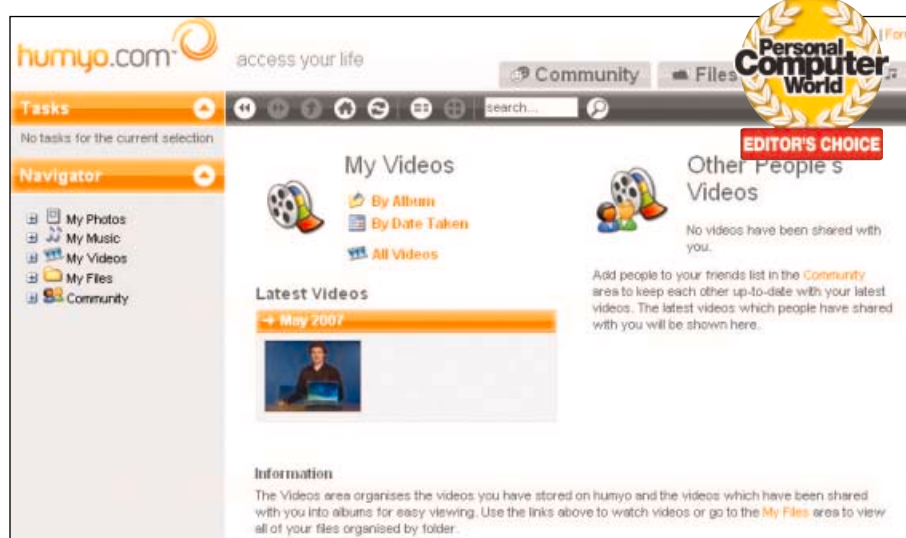
Divshare's media player allows you to play video and music, and show photos within the application

service for capacity in this round-up. However, there is a catch, in that it's the only service that places restrictions on the types of files you can upload.

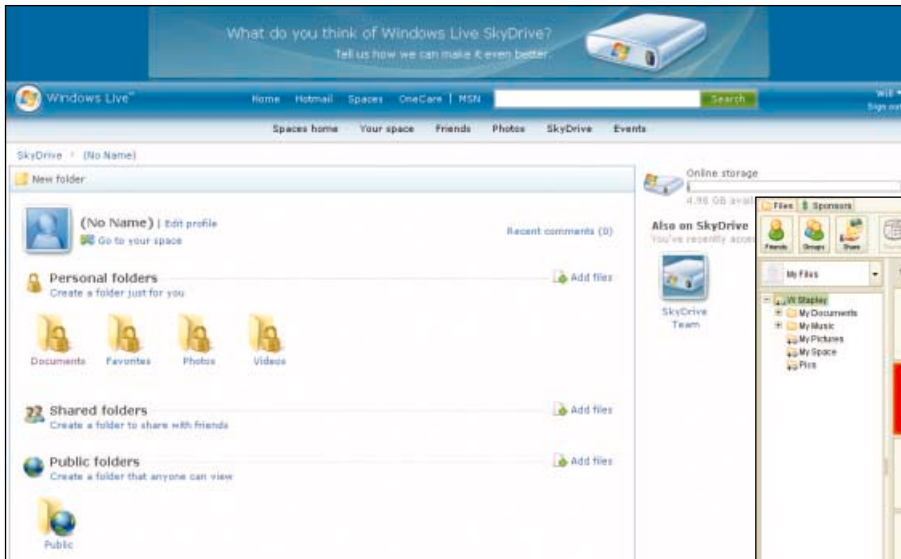
The majority of your storage (25GB) is made available for media files – for example, music, videos and photos – with the allowance for all other file types sitting at 5GB. You'll also need to make sure you connect to the service regularly; leave it longer than 90 days and Humyo reserves the right to delete all your stored data.

'Humyo's mix of storage and easy-to-use interface makes it compelling choice'

There is a desktop client for Humyo, but you only get a 14-day trial with the free service, after which you'll need to upgrade to the Premium version, which costs £39.99 per year (£29.99 for the first year) and increases your allowance to 100GB. This means most will

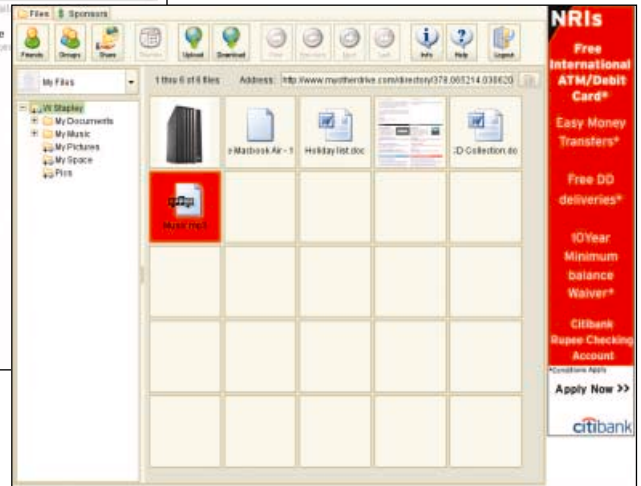


With servers housed in a former Bank of England vault, Humyo is reasonably safe from physical attack



Left: Skydrive is free, but requires a Windows Live ID to work

Below: Myotherdrive suffers from the lack of a professional feel



be left to use the web-based interface, but being well-designed, this is no great problem. Multiple files, including folders, can be uploaded in one go.

As long as you don't have a huge amount of non-media related files, Humyo's mix of a large amount of storage and easy-to-use interface makes it a compelling choice.

Microsoft Windows Live Skydrive

You'll need a Windows Live ID to use the Skydrive service, which is available for free, and once logged in, you're presented with a clear and intuitive interface.

Files can be uploaded either using a form or, if you install the upload tool, via drag-and-drop – annoyingly, neither methods accept folders. A bigger drawback, however, is that the maximum individual file size is set at just 50MB, which means it's no good for storing videos or other large files.

The file transfer process isn't particularly special either, the main problem being that there's no progress bar, so you'll have no idea how long the transfer is likely to take once

you've started it. What's more, Skydrive was one of the slowest services on test for upload speeds, only

managing to muster an average of 31.3Kbytes/sec. On the plus side, all file transfers are secure and our tests recorded a much more respectable average of 209.1Kbytes/sec when downloading.

Skydrive is easy to use and has a clean interface, but the 50MB individual file limit will be enough to put many off. It's also very slow when it comes to uploading and there are better alternatives available with larger free storage capacities.

Myotherdrive

The entirely Java-driven Myotherdrive interface isn't particularly pretty, but doesn't take long to get to grips with. There is, however, a short delay before it loads. There's no drag-and-drop option, so you're restricted to using a dialogue box to upload files. However, it does allow you to upload entire folders in one go, retaining the full folder structure in the process.

File transfers aren't secured and, just like Humyo, your files will be at risk of being deleted if you fail to access the service within a 90-day period.

Out of all the services reviewed here, Myotherdrive certainly feels the least professional. For example, click on the Help link and the rather unhelpful message 'Helpful Articles (Coming Soon)' appears. And although the interface has a good selection of features, it looks really basic and isn't as slick as some of the other services on test. You can arrange photos into albums, but there's no media player included.

Myotherdrive was the slowest service when downloading files, managing an average speed of just 15Kbytes/sec. Uploading wasn't that much better either, although the average of 80.7Kbytes/sec was faster than the woeful 31.3Kbytes/sec we recorded using Windows Live Skydrive.

Lab results

Humyo and Diino scored highly with their average upload and download speeds, while Myotherdrive showed it had room for improvement

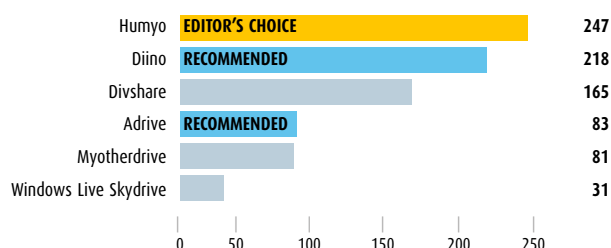
To test the transfer speeds of each service, we used a variety of files at different times of the day and recorded the average speeds.

These figures show what we achieved, but they should only be

treated as a rough guide. Factors such as the speed of your broadband and the number of people using the storage service in question will affect your transfer speeds.

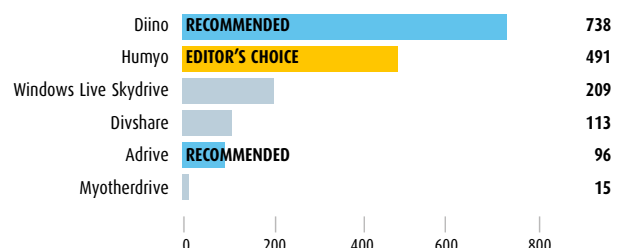
Average upload speed (Kbytes/sec)

Bigger is better



Average download speed (Kbytes/sec)

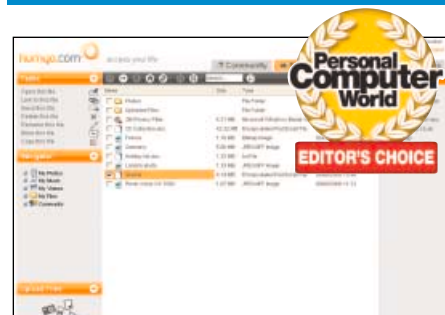
Bigger is better



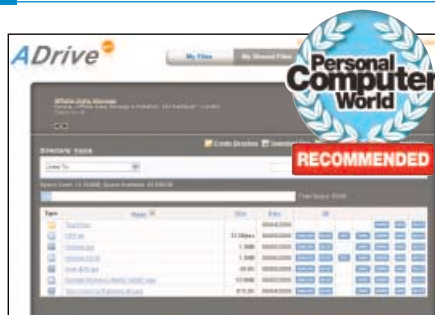
Online storage	 RECOMMENDED		 RECOMMENDED		 EDITOR'S CHOICE	
	ADrive	DIINO	DIVSHARE	HUMYO	MICROSOFT WINDOWS LIVE SKYDRIVE	MYOTHERDRIVE
MANUFACTURER	ADrive	DIINO	DIVSHARE	HUMYO	MICROSOFT WINDOWS LIVE SKYDRIVE	MYOTHERDRIVE
Price	Free	Free	Free	Free	Free	Free
URL	www.adrive.com	www.diino.co.uk	www.divshare.com	www.humyo.com	http://skydrive.live.com	www.myotherdrive.com
SPECIFICATIONS						
Total free storage	50GB	2GB	5GB	30GB	5GB	5GB
Maximum individual file size	2GB	500MB	200MB	25GB media files, 5GB other	50MB	5GB
File type limits	None	None	None	25GB media files, 5GB other	None	None
Transfer limits	None	500MB per day	50GB downloads per month (100Kbytes/sec download limit)	None	None	10GB per month
Encrypted file transfers	✗	✓	✗	✗	✓	✗
Multiple file uploads	✓	✓	✓	✓	✓	✓
Drag-and-drop option	✓	✓	✓	✓	✓	✓
Folder uploads	✓	✓	✗	✓	✗	✓
Desktop client	✗	✓	✗	✗	✗	✗
Automatic backups	✗	✓	✗	✗	✗	✗
File sharing	✓	✓	✓	✓	✓	✓
Slideshow	✗	✗	✓	✓	✗	✗
Music player	✗	✗	✓	✓	✗	✗
Video player	✗	✗	✓	✓	✗	✗
Maximum inactivity period	None	Not specified	Not specified	90 days	Not specified	90 days
SCORES						
Features	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Performance	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
Ease of use	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★
OVERALL	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★	★★★★★

Editor's Choice

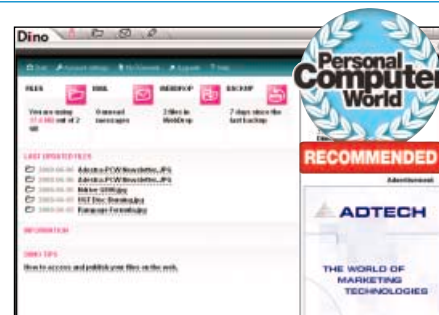
Editor's Choice Humyo
Recommended ADrive • Diino



Humyo



ADrive



Diino

If you have a large selection of files that you want backed up online, the 50GB of free storage offered by ADrive is difficult to ignore. Aside from the massive amount of storage offered, though, there aren't many other features and the transfer speeds we experienced were a little disappointing, but it's still worthy of a Recommended award.

Although it offers the smallest amount of free storage (2GB), the service offered by Diino certainly has its advantages. Unlike the rest in

this test, it comes with a free desktop client, which not only makes transferring files easy, but also allows for automatic backups to be scheduled. We found the download speeds to be hugely impressive, clocking an average of 738Kbytes/sec. The 500MB daily transfer limit could be a problem if you need to quickly get hold of all your data, but it's still a decent service for those who don't have huge storage requirements and therefore also picks up a Recommended award.

The Editor's Choice award goes to Humyo. Some won't appreciate the way Humyo dictates how you must use your 30GB of free storage, but since 25GB is reserved for music, videos and photos, it's the perfect place to store a backup of your media library.

You can also play back all your media files directly on the website and there are no transfer limits. What's more, it performed well in our speed tests, topping the upload table and coming second only to Diino for downloads. **PCW**

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Portable power

Great for both work and play, a fast notebook is the perfect alternative to a desktop. Emil Larsen checks out the latest crop

Miniature notebooks seem to be taking the market by storm (we've reviewed both the Acer Aspire One and Asus Eee 901 in the Reviews section this month). But while these are great for people frequently on the move, they're no match for a desktop replacement when it comes to performance, features and usability.

This month we take a look at a selection of top-of-the-range notebooks, all of which will be suitable for playing games, performing video editing and watching high-definition films.

We wanted to avoid restricting manufacturers too much, so simply asked that all models feature at least a 17in display and cost no more than £1,299 including Vat.

As usual, we've judged each laptop on a number of factors, including design and styling, build quality, features and, of course, value for money. We also put each model through our rigorous set of benchmarks and, rather than rely on manufacturer-quoted dimensions, measured and weighed them ourselves.

Those in the market for a new notebook may be inclined to hold off for a few weeks, by which time Intel's Montevina platform should be upon us. This new platform will be branded Centrino 2 and will bring an updated integrated graphics chipset for some notebooks as well as support for DDR3 Ram and optional Wimax integration. But for those who need a notebook now, these laptops remain some of the finest on the market.

ON TEST

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Editor's choice

'Mini-notebooks are no match for a desktop replacement when it comes to performance, features and usability'



Acer Aspire 8920G

Price £1,289.99 **Contact** Comet 08705 425 425 www.comet.co.uk



The 8920G sacrifices some usability for a great set of features



This is the only laptop in the round-up to feature a screen with a 16:9 aspect ratio. The end result is that it's a squatter display than the rest, but it is great for viewing spreadsheets side by side and, of course, films. It's big at 18.4in but is sleek and light compared to models with similar-sized screens.

The wider design means there's space for a keyboard with a numeric keypad. Acer has also managed to squeeze in a multifunctional media control pad to the left, which lights up during use and is a real attention grabber.

The chassis features a sturdy dark-blue LCD backing, black underside and a textured silver wrist rest, while the keyboard has a glossy black finish to it. The keyboard is similar to that on the Toshiba, both being a little slippery to type on if you're not used to using them. However, the Toshiba is more pleasant to use because on the Acer model, your thumb consistently hits the chassis curb when you use the spacebar, making prolonged typing stints uncomfortable.

The screen has a sensationally wide colour gamut (we measured over 90 per cent of NTSC gamut) which means it can display a better range of colours than most notebooks and is therefore highly suited to professionals such as graphic designers.

An Intel Core 2 Duo T9300 processor (running at 2.4GHz) makes mincemeat of any office task you throw at it. Like every notebook tested here, the Aspire 8920G comes with 4GB of Ram, but all suffer from the same 32-bit Vista memory restriction, so you can only access just over 3GB.

Vista SP1 lets you know there's 4GB installed but Windows still won't make more than 3GB available to programs. Having two identical Ram sticks for

dual-channel operation no longer has a significant effect on performance, so the last gigabyte appears to be included purely as a sales gimmick.

The 8920G uses Nvidia's GeForce 9650M GS mobile graphics card with 512MB of GDDR3 memory. GDDR3 memory is preferable to GDDR2 because it has lower power requirements and is capable of a greater data bandwidth. The 9650M GS did a reasonable job in our benchmarks, showing it can run a few older games at a high resolution, but newer games need a GeForce 8800M GTX or similar for high-resolution gaming.

Vista Ultimate is included, which adds the Windows Complete PC Backup and Restore tool, Fax and Scan software and BitLocker drive encryption to Vista Home Premium's features. But one of the most useful features is Shadow Copy, which helps protect individual files and folders against accidental deletion or modification.

You get six speakers – five tweeters and a subwoofer – for surround sound. These are Dolby Home Theatre certified on the 8920G. Since the speakers are placed close together, we noticed no surround-sound effect during testing, but it ticks more boxes in the one-upmanship game. Toshiba's speakers are also Dolby certified but sound louder and more responsive, again proving that a Dolby-optimised driver doesn't guarantee the speakers will sound good.

Battery life was good for the group and its 4.7kg weight isn't bad. A recent £100 price drop brings the 8920G just under our £1,299 group test ceiling and cements its outstanding value.

Although the Toshiba Satellite P300 lacks the high-resolution screen and Blu-ray reader of this laptop, we still feel it beats the Aspire 8920G in terms of usability and the Toshiba is also £100 cheaper.

Verdict

Pros Blu-ray built in; large screen; features; big storage capacity

Cons High keyboard lip is annoying; 16:9 aspect ratio won't suit some workloads; underwhelming speakers

Overall An outstanding feature list and great performance with just a few usability niggles

Features ★★★★★

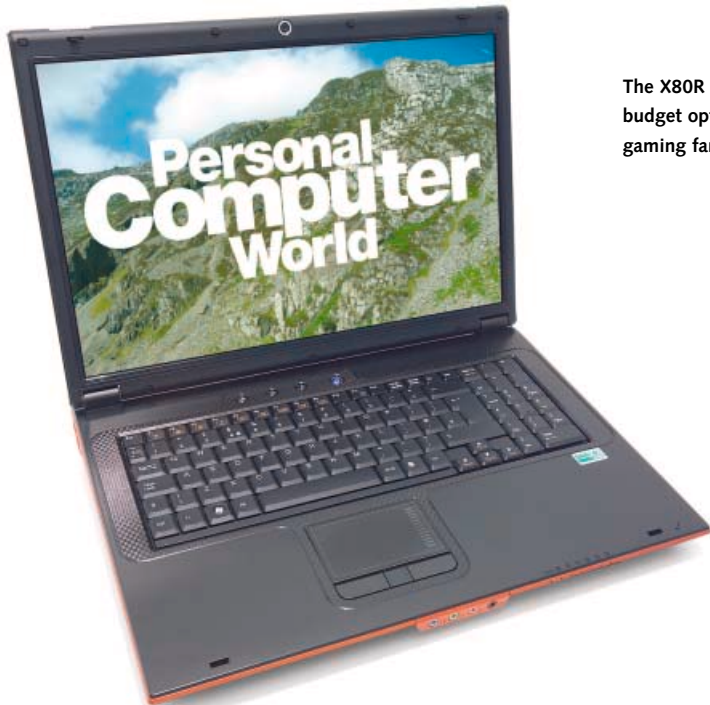
Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Novatech X80R

Price £1,299 **Contact** Novatech 0871 222 2812 www.novatech.co.uk



The X80R is a good budget option for gaming fans



This notebook uses Clevo's M57RU chassis, which is a design that has stood still as competitors have moved forward with slicker ideas. Its angled front, orange trim and textured, chequered keyboard border still look good but the keyboard rattles a little as you type on it. It's also a lot thicker than the new chassis from Toshiba and Acer, and its speaker positioning – and resulting audio quality – is abysmal.

When we tested a Clevo M57RU-based laptop a few months ago, we noticed its screen was considerably dimmer than the competition at the time. Since then we've made a habit of testing the brightness of all laptop screens. It's not a perfect test, since laptops of the same model from the same manufacturer can perform differently when they come off the production line. However, we noticed multiple similar notebooks coming with unpleasantly dim screens.

The Novatech X80R came with a slightly dimmer screen than the rest this month, but a score of more than 130cd/m² (which is what this model achieved), is a good result. At 1,920x1,200, the screen's resolution is also outstanding and provides even more detail than the impressive Acer Aspire 8920G can.

The fastest mobile graphics card, a GeForce 8800M GTX, tops the Novatech X80R's spec sheet. This is an expensive component and to see Novatech squeeze it into a notebook costing less than £1,300 is impressive. The 8800M GTX comes with 96 stream processors, which is three times the number in the GeForce 9650M GS, used in the Acer Aspire 8920G. The graphics card also benefits from a sky-high 1,250MHz shader speed.

As expected, cuts have been made elsewhere to allow for this addition. Most notable is the processor –

an Intel Core 2 Duo T5550 clocked at 1.83GHz.

This processor doesn't come from the 45nm Penryn generation, instead relying on older 65nm technology. It also has a slower FSB (front-side bus) of 667MHz compared to the latest 800MHz, and less L2 cache than the rest of the group (just 2MB).

Furthermore, the Novatech X80R doesn't include Intel's VT virtualisation technology, so users playing around with virtual operating systems might notice a performance hit.

Although the 8800M GTX was the fastest by some margin in our gaming tests, the Novatech's performance is definitely affected by this rather sluggish processor. The reason it's not as fast as we had hoped is that the CPU is acting as a bottleneck. The Alienware m15x (read a review at www.pcw.co.uk/2219254), equipped with an 8800M GTX, managed a 34 per cent speed increase in our 3Dmark06 benchmark by using a faster processor. However, at higher resolutions the 8800M GTX comes into its own and dominates the rest of the group.

Conversely the slower processor used by this Novatech is less power hungry and, despite the high-end graphics card (which draws 44W of power itself), the DVD playback time was impressive, lasting one hour, 50 minutes.

It is, however, the noisiest laptop of the four models in the group. You can clearly hear the cooler bolted onto the 8800M GTX, which blows air out of the right-hand side of the notebook.

The keyboard rattles a bit, the chassis is less slick looking than the Toshiba and Acer models and it suffers from a relatively slow processor, but for gamers on a budget this is a decent notebook.

Verdict

Pros High-resolution screen; 8800M GTX outstanding for GPU-heavy games

Cons Noisy; poor CPU performance; tinny speakers

Overall An affordable 8800M GTX-based laptop that will suit gamers on a budget

Features ★★★★★

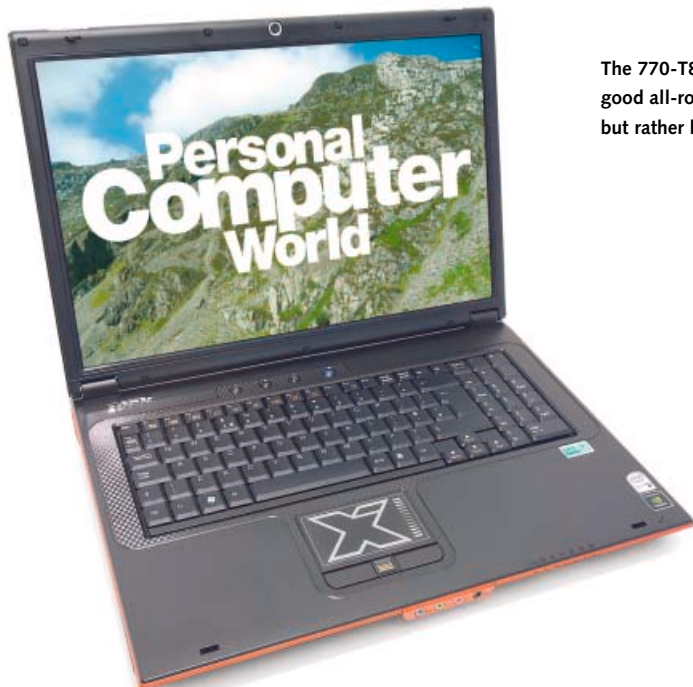
Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Rock Xtreme 770-T8300

Price £1,293.01 **Contact** Rock 0845 688 0501 www.rockdirect.com



The 770-T8300 is a good all-rounder but rather heavy



After going into administration two months ago (see www.pcw.co.uk/2216219), Rock is back, having been bought by Stone. The impressive three-year warranties Rock offered on all its laptops continue, and existing warranties will also be fully honoured.

The organisation may have a new-look structure but our first impression is that the laptops are similar to the ones we've seen countless times before, using mostly Clevo-sourced chassis.

The model submitted for this round-up uses the same Clevo M57RU chassis that Novatech has plumped for, which means many of the same benefits and criticisms can be levelled at it. This includes the tinny, quiet speaker system and the keyboard suffering from a slight rattle during use; the latter could be annoying during prolonged use. Other problems that both the Novatech and Rock suffer from as a consequence of the choice of chassis are limited card reader support (only SD and Sony Memory Stick cards are catered for) and poor USB socket placement. On both models two out of four USB sockets are stacked, so one thick USB device (such as a TV tuner) is likely to block off the other.

The feature list is impressive. If you have a Draft-N router, the 802.11n chip in this notebook will make full use of it, providing you with faster and further-reaching wireless communication. It also houses Bluetooth, a 2-megapixel webcam and built-in microphone.

Rock has gone for a slightly different balance of components compared to Novatech's similar-looking laptop, with the emphasis more on CPU power than graphics performance. The Intel Core 2 Duo T8300 processor, which runs at 2.4GHz, is considerably faster than Novatech's 1.55GHz T5550, while the Nvidia

Geforce 8700M GT graphics card is considerably slower than the 8800M GTX.

This graphics card is similar in design to the Geforce 9650M GS in the Aspire 8920G – so similar that it produced just a whisper lower performance than its newer sibling.

With the others using 5,400rpm models, this is the only laptop with a 7,200rpm hard drive. The benefits of a fast hard drive should never be underestimated and the Xtreme 770-T8300 sat near the top in our PCmark05 table. But while fast hard drives can boost performance, they are also frequently the cause of poor battery performance. The Rock only managed to stay off the mains for one hour, 18 minutes during our Mobilemark DVD playback test.

Rock has chosen a 1,680x1,050 resolution panel for the Xtreme 770, which is a notch below the incredibly detailed Novatech display. This is the minimum resolution you need to be able to work comfortably on two documents side by side. Despite our previous criticism of the performance of displays on some Clevo-based laptops, this panel was surprisingly bright (we measured over 150cd/m²), which should provide many years of pleasant viewing.

One thing we couldn't work out was why the Rock Xtreme 770-T8300 weighs 100g more than the Novatech model. It's this extra weight that means the Rock gets the unenviable accolade of heaviest notebook in show, albeit only by a small amount.

Despite solid all-round performance, the Rock Xtreme 770-T8300 doesn't have a stand-out feature. Every component is bettered by another notebook and we feel that both the Acer and Toshiba models provide better components given the £1,299 price limit.

Verdict

Pros Speedy hard drive; good all-round specs

Cons Average graphics card for price; poor speakers; keyboard rattle

Overall Not a bad laptop but every component is bettered in competing models

Features ★★★★★

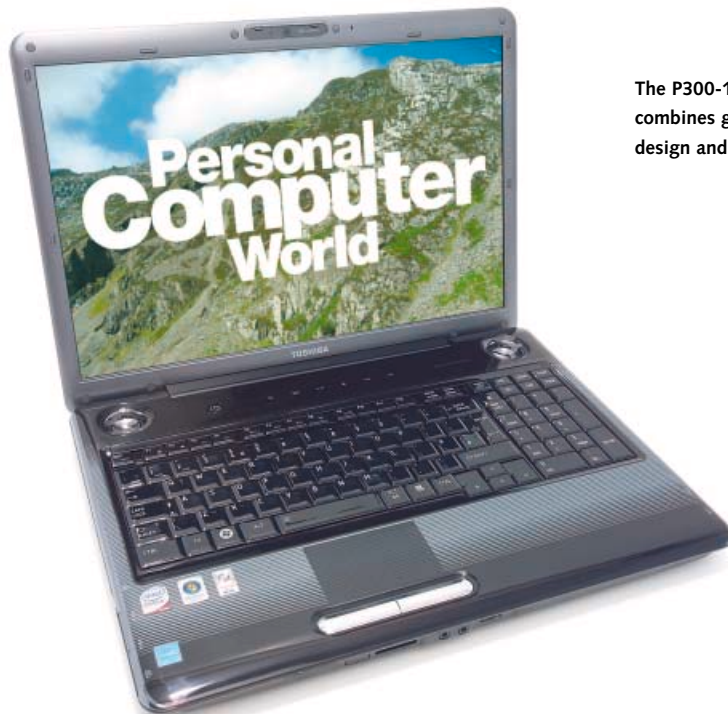
Performance ★★★★★

Value for money ★★★★★

Overall ★★★☆☆

Toshiba Satellite P300-172

Price £1,198.99 **Contact** Toshiba 0870 444 8944 www.computers.toshiba.co.uk



The P300-172 combines great design and features



Buying laptops on the internet without touching and using what you're getting has led to manufacturers stuffing their designs full of the fastest components and every feature under the sun in a game of one-upmanship. The downside to this is that manufacturers often spend much less on the ergonomics of the keyboard, touchpad and chassis.

Toshiba has got it right with the Satellite P300-172. The chassis is the lightest and slimmest in the group, while the keyboard and touchpad have had a complete makeover since the Satellites that preceded it. The chassis is a mixture of polished greys with a collection of line patterns to spruce it up. The only drawback to the stylish design is that the notebook is prone to finger smudges.

The keyboard has a glossy black finish, just the right amount of travel and no ridge next to the spacebar (something the Acer Aspire 8920G suffers from), so you can type unimpeded for long periods. The touchpad features two firm, silver mouse buttons that are a joy to use. Touch-sensitive controls are also built into the top of the chassis.

With such a stylish and well thought-out chassis we were sure there would be a few corners cut, as the notebook is more than £100 cheaper than our price limit.

The screen's resolution is the first casualty. At 1,440x900 it doesn't have a huge amount of detail for a 17in display and it's a little too low to sit two documents side by side. The flipside is that if you find high-resolution displays tiring on your eyes, this screen has an excellent clarity to it, helped by its stunning brightness – we measured a whopping 187cd/m² using a Spyder3 Elite calibrator (read more about this calibrator in our review at www.pcw.co.uk/2206000).

The meat and potatoes of this system, a Core 2 Duo T9300 processor, 4GB of DDR2 Ram and two 320GB hard drives, are all excellent components. The T9300 runs at 2.5GHz and has a full 6MB of L2 cache, rather than the 3MB of L2 cache present on the Penryn processors of the Rock and Acer notebooks, which let it sail through our CPU-intensive tests.

We've been impressed with Toshiba's Harmon Kardon-branded laptop speakers in the past and things were no different this month. Without doubt, they were head and shoulders above the rest of the pack; the sound was perhaps a fraction duller than we've heard before but they still managed to output incredibly loud tunes. The speaker cones sit about 1cm below a clear plastic grille and you can see them jump up and down as they pump out their bass-filled tones.

There's no Gigabit Ethernet onboard, which could pose a problem if you regularly back up data to a network-attached storage device or Windows Home Server across a Gigabit network, but you do get a 10/100Mbps/sec version. And, as with the rest, Draft-N Wifi is built in.

The Mobility Radeon 3650 graphics card is great for decoding high-definition content and achieved a reasonable 3Dmark06 score of 4,298. Performance tailed off in our World in Conflict test, though, dropping to a mediocre 9fps (frames per second). This result pretty much mirrors the 3Dmark06 rankings.

The P300-172 has a fabulously large storage capacity, great CPU performance and we feel this is simply the nicest laptop to use out of the group. The pleasant screen, sleek chassis and the quiet and cool operation makes the P300-172 the best all-rounder for less than £1,299.

Verdict

Pros Light; clear screen; great keyboard, speakers and chassis

Cons Relatively low-resolution screen; slow Ethernet

Overall An excellent chassis and screen make this the most pleasant laptop to use

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

£1,299 notebooks

				
				
				
MANUFACTURER	ACER	NOVATECH	ROCK	TOSHIBA
Model	Aspire 8920G	X80R	Xtreme 770-T8300	Satellite P300-172
Price	£1,289.99	£1,299	£1,293.01	£1,198.99
Delivery charge (UK mainland)	Free	Free	£23.50	£11.75
Sales telephone	08705 425 425 (Comet)	0871 222 2812	0845 688 0501	0870 444 8944
URL	www.comet.co.uk	www.novatech.co.uk	www.rockdirect.com	www.computers.toshiba.co.uk
HARDWARE				
Processor	Intel Core 2 Duo T9300 2.5GHz	Intel Core 2 Duo T5550 1.83GHz	Intel Core 2 Duo T8300 2.4GHz	Intel Core 2 Duo T9300 2.5GHz
Chipset	GM965/ICH8-ME	GM965/ICH8-ME	GM965/ICH8-ME	GM965/ICH8-ME
Ram	4GB DDR2 667MHz	4GB DDR2 667MHz	4GB DDR2 667MHz	4GB DDR2 667MHz
Occupied/spare memory slots	2/0	2/0	2/0	2/0
Hard disk manufacturer and model	2 Western Digital Scorpio	Western Digital Scorpio Blue	Seagate Momentus 7200.2	2 Toshiba MK3252GSX
Hard disk size and speed	2 320GB 5,400rpm	160GB 5,400rpm	200GB 7,200rpm	2 320GB
Number of Express Card slots	1 54mm	1 54mm	1 54mm	1 54mm
Number of PC Card slots	0	0	0	0
Number of USB ports	4	4	4	4
Number of Firewire ports	0	1	1	1
MULTIMEDIA				
Graphics processor – manufacturer and model	Nvidia Geforce 9650M GS	Nvidia Geforce 8800M GTX	Nvidia Geforce 8700M GT	ATI Radeon Mobility HD 3650
Graphics processor memory	512MB GDDR3	512MB GDDR3	512MB GDDR3	512MB GDDR2
Screen size and native resolution	18.4in 1,920x1,080	17in 1,920x1,200	17in 1,680x1,050	17in 1,440x900
Video outputs	VGA, HDMI	DVI, S-video	DVI, S-video	VGA, HDMI, S-video
Optical drive manufacturer and model	Optiar BD Rom BC-5500A	TSSTcorp SN-S082H	Sony DW-Q58A	Pioneer DVRKD08A
Optical formats supported	Blu-ray (read), DVD+/-RW DL	DVD+/-RW DL, DVD-Ram	DVD+/-RW DL	DVD+/-RW DL, DVD-Ram
Soundchip	Realtek HD	Realtek HD	Realtek HD	Conexant HD Smartaudio 221
Speaker setup	5.1	Stereo	Stereo	Stereo
OTHER INFORMATION				
Additional hardware	1.3-megapixel webcam, Gigabit Ethernet, 56K modem, 3-in-1 card reader, fingerprint reader	Serial port, 2-megapixel webcam, Gigabit Ethernet, 56K modem, 2-in-1 card reader	Serial port, 2-megapixel webcam, Gigabit Ethernet, 56K modem, 2-in-1 card reader	1.3-megapixel webcam, 3-in-1 card reader, 100Mbps/sec Ethernet, 56K modem
Wireless networking	802.11a/b/g/Draft-N	802.11a/b/g/Draft-N, Bluetooth	802.11a/b/g/Draft-N, Bluetooth	802.11a/b/g/Draft-N, Bluetooth
Battery capacity (milliamp hours)	4,800mAh	4,400mAh	4,400mAh	4,000mAh
Dimensions in mm (wxdxh)	442x300x50	397x278x54	397x278x54	397x287x45
Operating system	Vista Ultimate	Vista Home Premium	Vista Home Premium	Vista Home Premium
Vista experience index (out of 5.9)	5.1	4.5	5.1	5.1
Included retail software	Cyberlink Arcade Deluxe, Microsoft Works 9	None	Roxio Creator	Microsoft Works 8.5, Ulead DVD Moviefactory
Standard warranty (RTB = return to base, C&R = collect and return)	1yr RTB	1yr RTB	3yrs C&R	1yr C&R
SCORES				
Features	★★★★★	★★★★★	★★★★★	★★★★★
Performance	★★★★★	★★★★★	★★★★★	★★★★★
Value for money	★★★★★	★★★★★	★★★★★	★★★★★
OVERALL	★★★★★	★★★★★	★★★★★	★★★★★

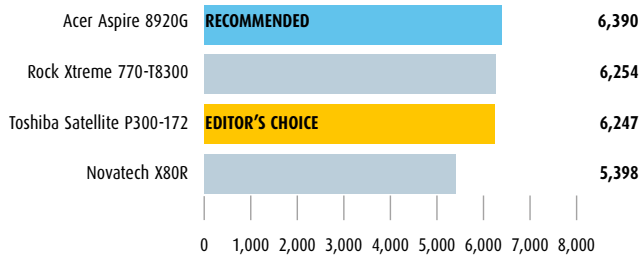
Vendors of group test products are only obliged to sell them at the prices quoted here (which include credit card surcharges) for the life of this PCW issue. They may also change components under certain circumstances.

Lab results

The laptops in this test are packed with features, sometimes to their detriment. Screen brightness and weight proved to be important considerations

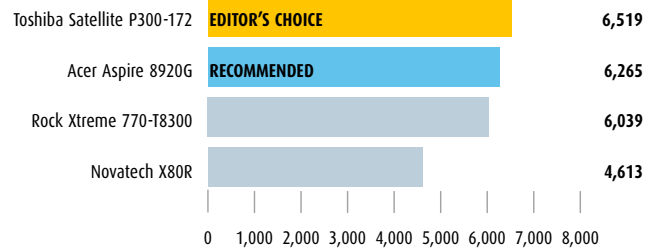
PCmark05 Overall (1,024x768)

Bigger is better



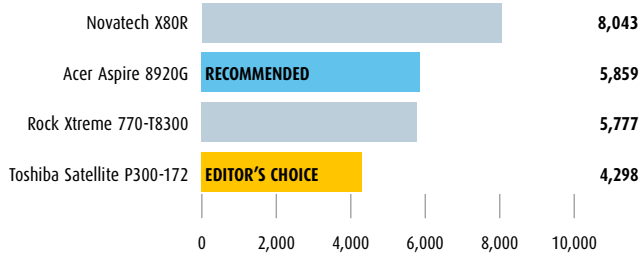
PCmark05 CPU (1,024x768)

Bigger is better



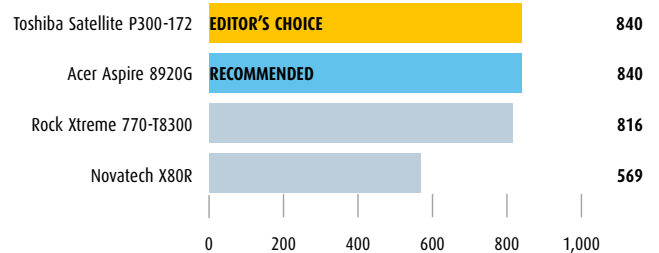
3Dmark06 (1,024x768 in 32-bit colour)

Bigger is better



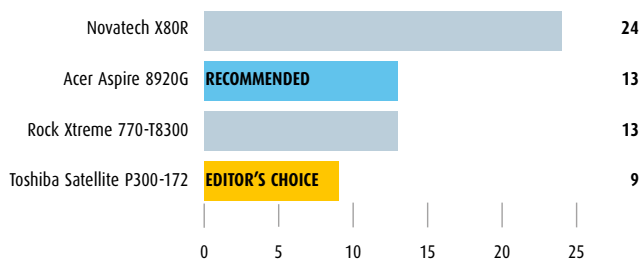
Cinebench 9.5 (multi-CPU)

Bigger is better



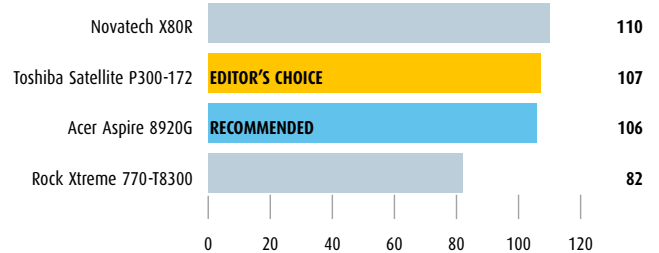
World in Conflict (fps, 1,024x768 high quality, 2xAA)

Bigger is better



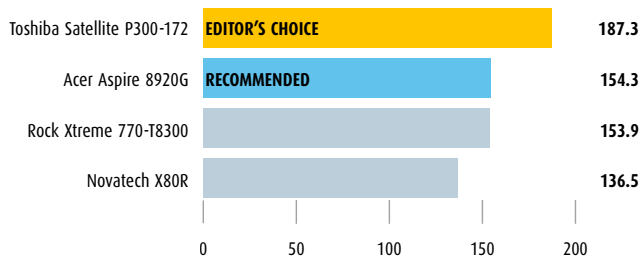
Mobilemark 2007 DVD playback in minutes

Bigger is better



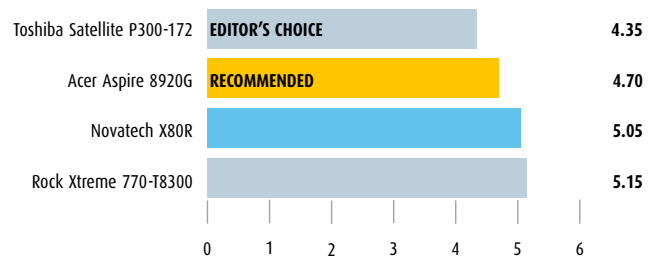
Screen brightness (cd/m²)

Bigger is better



Weight including power adapter (kg)

Smaller is better



Please see page 72 for an explanation of how we tested the PCs

Upgrading your laptop

Desktop PCs offer peace of mind for their upgradability. If you need more Ram, a faster processor or a graphics card for the latest games, then it's easy and relatively cheap to replace what you already have.

Notebooks, on the other hand, have had a lot of bad press about upgrading. In the past their processors were soldered to the motherboard and archaic chassis designs meant it was difficult to access pretty much anything.

Nowadays processors aren't soldered to the motherboard but are still the most difficult to replace because cooling solutions are often designed solely for one processor.

Memory is often the easiest component to upgrade. Laptop memory modules are called Sodimms (small outline Dimms) and the newest contain 2GB per stick, giving a maximum capacity of 4GB on modern notebooks with two slots. Intel's Centrino 2 platform, due next month, brings support for 8GB of Ram, in DDR2 or the new high-speed, low-power DDR3 format.

Hard disks are also easy to upgrade, often requiring you to remove only one or two screws to access. You'll have to back up your hard disk but imaging tools can do this in one fell swoop. Unlike replacing a graphics card or Ram, if you upgrade a hard disk the old one needn't be thrown out. In fact, a small portable USB2 enclosure, which can cost less than £15 from companies such as Trust (www.trust.com), can turn it into a handy external hard disk.

Sound can be upgraded using external Audigy cards that can output to 7.1 surround-sound speakers and can perform other advanced effects in composition packages and games.

Upgrading your Wifi to Draft-N or adding other options to a Mini-PCI Express slot is also a doddle on many new notebooks. It's sometimes difficult to spot but the specifications sometimes list how many such slots a notebook has and they function just like regular slots in a PC.

Graphics cards are another tricky component to change. Three years ago Nvidia introduced its MXM standard, which is an open standard that AMD has also embraced for its ATI graphics card. MXM gives the graphics card a modular design, so it can be replaced like a notebook battery, and connects via a high-speed PCI Express interface. However, most laptops don't support them and they're expensive – if you can find them.

Upcoming external graphics cards, most recently AMD's XGP technology (<http://ati.amd.com/technology/xgp>), use a new external PCI Express 2.0 port. Fujitsu Siemens released pictures of the first such design, called the Amilo Graphicsbooster.

The Graphicsbooster is a small 0.5kg box that runs up to three external displays simultaneously, has a two port USB2 hub, and accelerates 3D gaming with its own ATI Mobility Radeon HD 3870 with 512MB of GDDR3 Ram.

Editor's Choice

Editor's Choice Toshiba Satellite P300-172
Recommended Acer Aspire 8920G



Toshiba Satellite P300-172

We end our round-up of laptops this month on a familiar note, in that build quality, ergonomics and design matter as much as a raw performance and a foot-long feature list.

You can upgrade all the key internal components of a laptop but there's no way of rectifying the poor keyboard on the Acer Aspire 8920G or making the Rock and Novatech speakers sound better.

Line all four up in a shop window without the specs and the Toshiba Satellite P300-172 will draw more crowds than the rest with its relatively light and slender profile, and easy-to-use keyboard and touchpad. Indeed



Acer Aspire 8920G

it's the Toshiba that scoops our Editor's Choice award.

The Toshiba P300-172 has a balanced array of components. Its Radeon HD 3650 graphics card can't match the Nvidia Geforce 8800M GTX in the Novatech X80R, especially at high resolutions, but the Core 2 Duo T9300 processor is top class. Digital storage addicts will get their fill from its two 320GB hard drives and its speakers are impressively loud against the competition, too.

The importance of looks is further borne out by the dominance of laptops with glossy screens. The glossy coating on the Toshiba is very thick, which makes using it in bright conditions

unpleasant because of reflections. This is offset, however, by a very bright backlight, which gives the display a vibrant feel; we've previously seen results above 160cd/m² only on specialised touchscreen devices. While a high contrast ratio is good for film playback, decent screen brightness is usually more important on a laptop, as it will be used in a variety of environments.

Although glossy screens are often associated with high contrast levels, the bright screen of the Toshiba pushes up the black level too so the contrast ratio suffers. We measured a contrast ratio of only 67:1 on the Toshiba notebook with our Spyder3 Elite calibrator, compared with 270cd/m² and upwards on the other three.

Novatech put all its eggs in one basket with the X80R, spending big bucks on the graphics card and just a few pennies on a two-year-old CPU, while Rock's laptop did not stand out at all.

We recommend Acer's Aspire 8920G, however, for its outstanding feature list. This includes fitting a Blu-ray drive, a great CPU and a good graphics card for less than £1,299. The jury's still out on whether wider displays are a more productive aid than standard 4:3 ones. Finally, we simply cannot understand how big manufacturers such as Acer, with huge research and development budgets, still fit the keyboard at the same level or, in Acer's case, below the surrounding chassis, thus ruining the typing experience. **PCW**

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Pookanyoni

Pookanyoni is a unique database program that frees its users from conventional database limitations. Try out the 14-day trial this month's cover disc

Pookanyoni's ease of use, customisable screens and scope makes it suitable for small business as well as industrial and corporate applications. Developed in Java, it can be installed on all operating systems, including Windows, Linux, Mac and Solaris. The Windows version is available now, with other versions set to follow shortly.

The ingenuity of the software's design becomes obvious with the simplicity and power of built-in data manipulation demonstrated throughout, bringing about intelligence never before witnessed within generic software. The approach to how data is handled and

the scope of the vast array of applications leaves one pondering if this software is not undervalued.

Its features include attaching and storing documents and images to a record, cost tracking and Asset Registers as well as defining when to apply the principles associated with capitalisation and a depreciation calculation tool, are but a few of the returns yielded from capturing invoices. The 'Show Me' function pulls out all of the

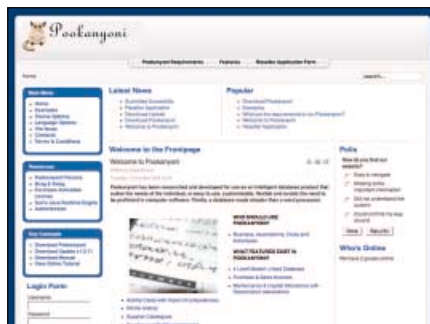
KEY FEATURES

- 4-Level Master Linked Database
- Purchase & Sales Invoices
- Maintenance & Capital Allocations with Depreciation Calculations
- Activity Cards with import of competencies
- Infinite History
- Supplier Catalogues
- Supplier and Staff Competencies
- 'What If' solutions
- Languages, Background & Theme customisation
- Security
- Own Catalogues
- Report Generation and export to preferred Word Processor

planned activities within the desired time frame and it can produce breakdown information. The element called 'What If' makes it possible to set conditions and time intervals for activities that traverse the entire database. These can then automatically update existing records.

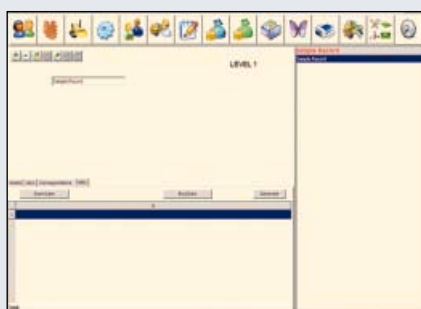
The constant access to history has been superbly

resolved throughout by employing navigators and lists as appropriate. Concerns about addressing competencies and safe working practices are effectively answered and the objectives of loss control and safety practitioners are immediately answered. Handy shortcuts will save time when capturing repetitive records.

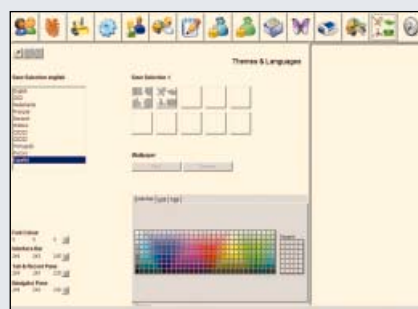


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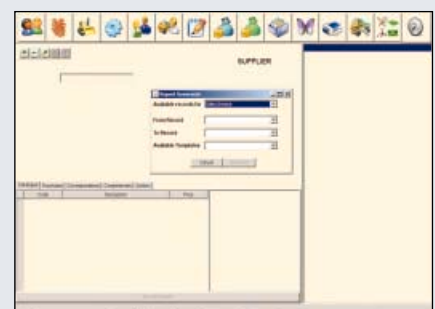
POOKANYONI | GET THE TRIAL SOFTWARE FROM THIS MONTH'S COVER DISC



1 The entry page gives you access to the full complement of services offered by Pookanyoni.



2 Set colours of both the font and the panes as well as the language and theme. Customising the program is easy.



3 A typical administration screen – Pookanyoni has a simple design and is easy to use.



OUT OF THE OFFICE

A desktop PC, huge monitor and networked laser multifunction printer may be more than satisfactory when you're sitting at your desk. Take them out of the office, however, and you start to wonder if something a little less bulky might be better. There's a lot to consider, but in this month's Business section, we take a look at what you might want to include in your ideal portable office and what's better left out.

We also take a look at some of the latest small-business products to hit the shelves, starting with a look at a new multifunction inkjet printer from market leader HP, while on the communication front, Draytek's newest broadband router gets a definite thumbs-up. A new Raid controller from Adaptec looks promising too, and we have reviews of tools for filing tax returns and keeping spam out of inboxes.

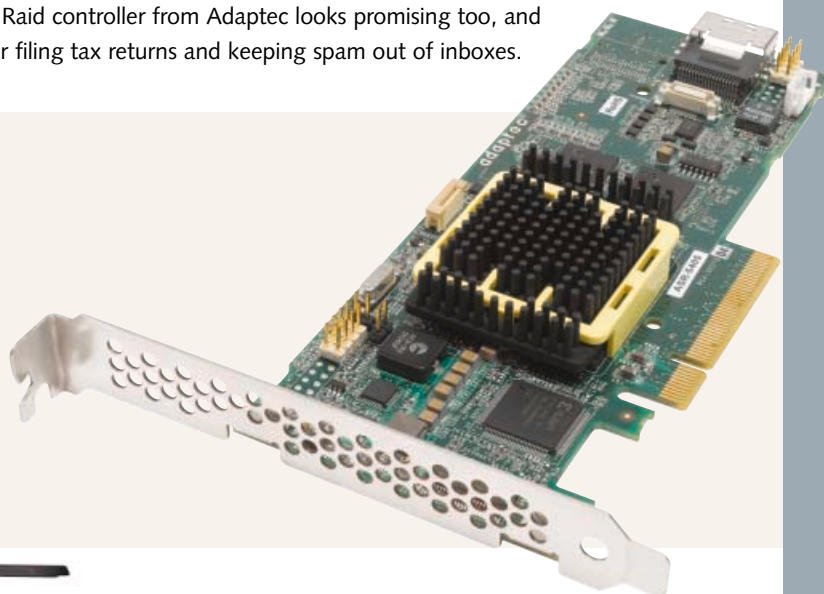
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OUR SCORING

Excellent ★★★★★ Very good ★★★★☆ Good ★★★☆☆ Below average ★★☆☆☆ Poor ★☆☆☆☆

OUR AWARDS

Editor's Choice: The best product in a comparative group test. Anything that wins this award is of better quality than its competitors.

Recommended: A product that combines great features, usability and value for money.

Great Value: Not the best in class, but a product that has superior features and performance for the price.



Editor's Choice
Business



Recommended
Business



Great Value
Business

The business awards are used for products that are more suited to home offices or small businesses.

BUSINESS



'Small projectors that can be carried around are an increasingly common part of the portable office'

See page 124

Portable office

Doing business on the move can be tough, but Alan Stevens investigates some of the options open to you

As companies become more reliant on IT to do business, staff without a permanent base and those who spend a lot of time out of the office can be seriously disadvantaged. But it doesn't have to be that way. There are lots of products available that can redress the balance and deliver everything from email on the move to the complete portable office.

Travelling desktops

The first thing you'll need is a notebook PC. There are hundreds to choose from, making it difficult to decide what to buy. Fortunately most can be easily put into one of two categories, with the emphasis either on performance and functionality or portability.

At first glance highly portable notebooks would seem to be an ideal solution. Typified by the Eee PC from Asus (starting at just under £200 ex Vat) and the recently released HP Mini-Note (from £300 ex Vat), they're very affordable as well as small, light and easy to carry around. They can also be used for a long time on battery power alone. But that doesn't necessarily make them the right way to go if you're a business user. See our group test in the August issue of *PCW* for more details on the latest ultra-light models.

Some business users will manage well with this type of notebook, for handling email, for example, surfing the internet or to access web-based applications. They can also be used for word processing and to work on spreadsheets, presentations and the like, offering a lot more computing power than a Blackberry or Smartphone in a much more usable format.

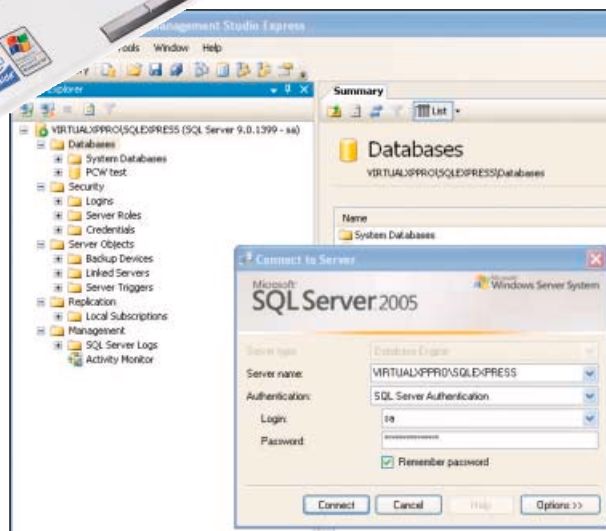
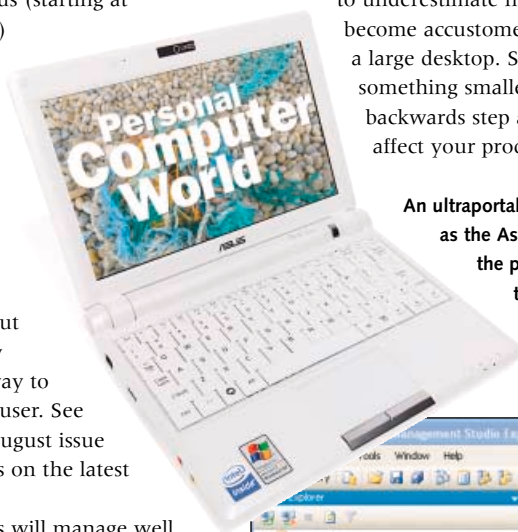
Beyond that, their basic specification can be a major limitation, especially if you've gone for a low-powered processor, limited memory and solid-state storage rather than a conventional hard disk. These options all help keep down costs and prolong battery

life, but can be a real drawback if you want to run processor-intensive applications or manage large amounts of data.

Load up a big database, for example, and a mini-notebook can really start to struggle, and a surprising number of business applications now do just that. The latest version of the ACT CRM application and the Business Contact Manager add-on for Outlook both store their information using a desktop version of Microsoft's SQL Server (SQL Server 2005 Express), and will show up the weaknesses in this sort of system.

Likewise, if you need to demonstrate or support software, or use virtualisation as part of your job, you'll definitely need something more powerful. There's also the small screen to take into consideration. This can be a real issue if you want to give presentations, even with a portable projector. It's important not to underestimate how quickly you become accustomed to working on a large desktop. Switching to something smaller can feel like a backwards step and, worse still, affect your productivity.

An ultraportable notebook such as the Asus Eee PC, may lack the power and capacity to run demanding business applications



Staying in touch

Making sure you have the right notebook for your needs is important, but equally important has to be making sure it's capable of being more than just a standalone system. At a pinch that might mean borrowing a network port at a customer or partner site, but it's not something you want to rely on. Far better instead to have your own independent means of communication, and there are two choices here – Wifi or a service provided by one of the mobile phone companies. Both have specific advantages and drawbacks, based around price, bandwidth and availability.

Wifi, for example, might appear to be the most affordable, given that most notebooks now come with a wireless networking interface built in. As well as office Wifi networks, this can be used to connect to wireless hotspots in airports, hotels, stations, conference centres, coffee shops and so on. Bandwidth isn't usually an issue, either, with fast services able to support remote access to an office Lan as well as email transfers.

On the downside, Wifi hotspots are often few and far between outside large conurbations, and you may have to subscribe to a number of providers to get the coverage you need. Although there are more and more free hotspots out there, most make a charge and they can be quite expensive to use, especially for short connections.

Mobile phone services, on the other hand, are much less location specific and should be available wherever you can get a

If you've no connection to an office network and need to manage a lot of data you may need a notebook that is able to run a local database such as SQL Server 2005 Express



Subscribe to a mobile broadband service and the necessary adapter is often supplied free, but only if you commit to a long contract

signal. However, you're likely to get low bandwidth (GPRS) connections outside towns and cities, rather than the faster 3G HSDPA services now available in many of those areas. That may not be an issue if you just want to check your inbox, but it could be if you need applications such as web conferencing or access to a remote desktop.

Bear in mind, too, the need to buy a mobile broadband adapter. Very few notebooks have these built in. Plug-in adapters are included free as part of services from companies such as Vodafone, Orange, O2 and T-Mobile, but you'll need to sign up for a contract of 12 months or more (£15-£25 per month) and there may be usage limits even then. Contract-free, pay-as-you-go services are also becoming available – T-Mobile has a pay-per-day option, for example, (capped at £4 per day) but you usually have to buy the adapter to use them. But if you're travelling abroad, pay great attention to the roaming charges if you want to avoid paying a fortune. See our online features at www.pcw.co.uk/2217002 and www.pcw.co.uk/2201214 for more information on mobile broadband.

Portable printing

Next consider your printing requirements. It's surprising how much we still rely on hard copies of things like quotations, invoices and the other

Portable colour printers such as the Canon Pixma iP100 cost more than standard models and may be limited in features

documents that constitute the stock-in-trade of many small businesses. The good news is that portable printers are widely available. The bad news is that they tend to cost a lot more than the average desktop inkjet or laser and may be quite limited in what they can do.

If you want to print small receipts and invoices, it's worth checking out portable Epos (Electronic Point of Sale) products made expressly for this purpose. Most of these will use thermal printing technology, resulting in a very robust and portable solution. One example is the Epson TM-P60, a battery-powered thermal printer with a choice of Wifi or Bluetooth wireless connectivity, which can run for up to eight hours on a single charge. At just over

£600 ex Vat it's not cheap, but if you need to print receipts or labels while out and about it's ideal.

Larger format thermal printers are available too, but they're not cheap, can be expensive in terms of consumables and they can't print in colour. For that you need to look at inkjets, such as the recently released Officejet H470wbt from HP (around £180), a small and very sleek colour printer with a long-life Li-ion battery plus both Wifi and Bluetooth options. Able to print at up to 23ppm (pages per minute) in black and white and 16ppm in colour, quality could be better and the consumables don't last very long, but it is a very portable solution. Alternatively consider a device such as the Pixma iP100 from Canon (pictured below), now selling for around £130 ex Vat. As well as text, this can reproduce good photographic quality images.

If you spend a lot of time on customer or partner sites you may be able to connect to their networks and print that way, but you will need compatible drivers. It's worth visiting vendor sites to get the latest 'universal' drivers. Available from companies such as HP, Xerox and others, these aren't

quite as universal as you might hope for but will provide basic printing facilities across a wide range of models.

Scan and more

A scanner could also come in handy, to capture documents for faxing, for example, and it needn't cost the earth. Ordinary desktop models starting at around £30 ex Vat and powered from the host PC (via a



Small projectors that can be carried around are an increasingly common part of the portable office

USB connection) can be pressed into service. Remember, though, that they won't be designed for portable use and you may have to pay more to get a small size or low weight and the ruggedness you need. If you do need to send faxes, consider signing up for a hosted service, such as Efax (www.efax.co.uk), which lets you send and receive faxes via email rather than having to do it directly.

Another increasingly popular accessory is the portable projector. Hook this up to your laptop and you can give a presentation to a large group without everyone having to huddle together around your notebook screen. Key features to look for here, again, include low weight and size, ruggedness plus the ability to simply pack up and go when you've finished a presentation rather than having to wait for the bulb to cool down.

Most of the big-name vendors, such as Benq, Epson and Optoma, have portable projectors that meet these requirements. Expect to pay from £350 ex Vat upwards.

Battery-powered LED projectors are available, but are more expensive and, as most will be used in locations where mains power is available, they're not essential. However, enough brightness to give your presentation on a wall rather than a screen could be very handy, and you might want to buy a portable screen just in case. We did see some novel pocket-sized projectors at Computex recently, but these are unlikely to appear until the end of 2008.

Finally, by fitting an inverter it's possible to run ordinary AC-powered IT equipment from a car or van battery. However, these are far from perfect and need specialist installation. It's also important to look very carefully at warranty terms when choosing any hardware. In some cases portable use may not be covered and getting things replaced may not be easy if you're on the road. Insuring against loss or theft of any portable equipment can, similarly, be difficult as well as expensive, with cover for consequential loss, especially of data, rarely available. **PCW**

MULTIFUNCTION PRINTER

HP Officejet Pro L7590

Do it all with this small-business multifunction device



The Officejet Pro L7590's controls were easy to master, but paper jams were a problem

Part of the HP Officejet family of small-business inkjet printers, the Pro L7590 is a professional-looking multifunction device offering not just colour printing, but walk-up scanning, copier and fax facilities. Everything, in fact, that a small business might need – and at a remarkably low price. But it's not necessarily the bargain it might at first seem.

The L7590 is built around a 1,200dpi colour inkjet printer with a 2,400dpi flatbed colour scanner and 50-sheet automatic document feeder fitted on top. A single paper tray holds up to 250 A4 sheets and the same feeder is used to accommodate envelopes and other materials. Printed pages are ejected onto a somewhat flimsy catch tray on top of the paper drawer.

Maximum duty cycle is 7,500 pages per month with a USB interface for local PC attachment, plus a 10/100Mbps/sec Ethernet port for network sharing. A bunch of slots allow USB and memory card storage devices to be connected and a Bluetooth wireless interface is an optional extra.

It's also possible to add remote scanning, with scans sent to network shares, although only by ordering the Officejet Pro L7680 (£213 ex Vat), which comes with the Digital Filing option already enabled.

The Pro L7590's top speed is a claimed at 35ppm (pages per minute) for black-and-white drafts, but we got nowhere near that, averaging 10ppm to 12ppm in this mode and around 8ppm for normal quality documents containing moderate colour. A snap-on duplexer is included as standard and works pretty well, but it does slow things down, adding a significant delay between sides to allow the inks to dry.

Quality was acceptable for most business documents, but photographs were dark and came out

still wet, causing significant page curl. We also encountered a lot of paper jams, many of them spurious, with the printer taking up to a minute to recover each time. When we tried to use the special 180g paper supplied by HP, we had to feed it in a sheet at a time to prevent it jamming.

On the plus side, the scanner and copier worked well. The controls were easy to master, the display clear and informative, and reproduction both fast and faithful. The fax machine also worked faultlessly in our tests and was easy to use. Ink cartridges were easy to change too, simply plugging into place behind a door at the front.

Depending on use, the standard cartridges supplied should last for around 820 (black) and 620 (colour) pages, but we'd recommend buying the Value replacements, which are capable of more than double that at a cost of £16 ex Vat for colour and £22 ex Vat for black ink. HP reckons running costs to be around half that of a comparable colour laser printer, which we think is optimistic. You're unlikely to have to change the print heads, but general business colour pages could still work out at around 4p to 5p each.

Other concerns were environmental, such as the volume of packaging we had to throw away, especially when installing ink cartridges, each of which was protected by a pair of plastic nozzle covers mounted in two plastic trays inside a plastic bag within a cardboard box. It also takes 20 minutes to prime the mechanism – and quite a while to shut it down, too. Most business users will, therefore, leave the printer on, consuming expensive power, which would not be a lot, but it's worth noting that the Pro L7590 isn't Energy Star-rated.

Alan Stevens

Verdict

Pros All-in-one device; easy to operate; integrated network interface; memory card slots

Cons Not as fast as claimed; frequent paper jams; wet prints and paper curl; waste

Overall Despite an impressive specification, this HP all-in-one doesn't deliver the goods as well as others

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £199
(£169.36 ex Vat)

Contact HP 0845 270 4215

www.hp.com

System requirements 1200dpi colour inkjet • 64MB Ram • HP PCL3 emulation • 2400dpi, 48-bit colour scanner • 50-sheet automatic document feeder • 250-sheet A4 paper drawer • USB2 and 10/100Mbps/sec Ethernet interfaces • Integrated print server • Web management interface • Multi-format card reader

BROADBAND ROUTER

Draytek Vigor 2820Vn

More than your average internet router



You may not need all of its features, but the curvy Vigor 2820Vn has a lot to interest the small-business buyer

Low-end broadband routers tend to be much of a muchness, offering little beyond basic Internet sharing, network ports and a firewall. Vigor 2820 products from Draytek, however, are available with an array of additional features designed to address the needs of the small business.

One of the most important features is a choice of ways to connect to the internet. Available on all versions, these start with a built-in modem for use with both ADSL and more recent ADSL2+ services, such as those offered by unbundled (LLU) service providers. There's also a separate Ethernet Wan port for connection via an external ADSL or cable modem, and a USB socket that can be used to connect via a 3G mobile internet adapter or phone.

More importantly, any of these can be used to provide the primary internet connection with one other configured as a backup should that link fail. Choose the ADSL and Ethernet connections, and traffic can also be load balanced across the two, while the USB port can be used to attach a shared printer if wireless connectivity isn't required.

There's plenty of choice on the Lan side, too, with a built-in four-port switch offering three 10/100Mbps/sec ports and a single Gigabit port for high-speed server attachment. On the wireless-enabled model we tested, a built-in wireless access point adds support for both 802.11b/g and 802.11n Draft 2.0 Wifi, with the usual array of security options including Wifi-Protected Access 2 (WPA2) encryption, along with the ability to isolate users on both the wireless and wired networks.

Of course, most small business will want to give users remote Lan access. A hardware VPN server is

included for this, which can handle up to 32 encrypted tunnels using a range of protocols. There's also Network Address Translation (Nat) available and a good stateful inspection firewall with optional Surfcontrol website filtering.

The review unit also came with optional Voice over IP (VoIP) facilities, with two ports available for use with Sip (Session Initiation Protocol) services. One of these allows a pair of handsets to be connected via the port doubler provided, while the other lets you route calls over the public switched network (PSTN). Rules to route calls based on cost are available as standard and a model with a pair of basic rate ISDN interfaces is yet another option.

We found the hardware itself to be well made and, although a slightly unusual shape and prone to getting quite warm, the device is easily hung on the wall or can be rackmounted using an optional kit.

In terms of management, there's the usual web-based interface. This isn't the most intuitive we've seen, but it's common to this and other Draytek products and relatively easy to master.

We had no trouble getting our Vigor 2820Vn to work the way we wanted as there are lots of tools available supported by plenty of clear documentation both in the box and on the UK distributor's website (www.draytek.co.uk).

On the downside, we weren't convinced that many customers will need the VoIP facilities, but they only add £10 to the price, and there's no need to buy them if you don't. That apart, there's no doubt most buyers will find the Vigor 2820 in all its forms to be a great little internet router that goes a lot further than most others to meet the needs of the small business.

Alan Stevens

Verdict

Pros Multiple Wan interfaces for load balancing and failover; 802.11n WiFi; hardware VPN server; optional VoIP support

Cons Management interface not as intuitive as some

Overall Offers a lot of really useful features of value to the small business, which aren't found on most other internet routers

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £183.30
(£156 ex Vat)

Contact SEG Communications
020 8381 5500, www.draytek.co.uk

Specifications Integrated ADSL/ADSL2+ modem • 10/100Mbps Ethernet port for external ADSL/cable modem • USB2 port for mobile adapter/phone or shared printer • 3 x 10/100Mbps/sec and 1 x Gigabit Ethernet Lan ports • 802.11b/g and Draft 2.0 802.11n WiFi

TAX FILING SOFTWARE

Acorah Software Taxcalc 2008

Get your tax returns in on time with this easy-to-use tool

Taxcalc makes it easy to capture capital gains information and generate the schedules needed to accompany online returns

According to Benjamin Franklin, "In this world nothing is certain but death and taxes." There's not much IT can do to prolong your lifespan, but software such as Taxcalc 2008 can help when it comes to taxes.

An official HMRC partner product, the version of Taxcalc we tried was Personal 6, which enables up to six individual returns to be made for the 2007/08 tax year. However, versions tailored for small businesses and limited partnerships are also available, the basic business package (£80 ex Vat), for example, supporting corporation tax and director/partner filings as well as ordinary employee returns. Implementations for accountants and other professional advisers are another option (from £100 ex Vat).

However, it's important to understand you can't carry over unused submissions to the following year – you have to buy a new licence and start all over again. And most accounting packages now allow you to make HMRC returns directly, without having to re-enter information, in which case it might be hard to justify the extra cost.

Once registered with HMRC for online filing, all you have to do is start the Taxcalc program, enter your username and password and choose the option to create a new return. Unlike the software on the Government's website, you fill in Taxcalc forms and save them offline before submitting to them to Revenue & Customs. Of course, you'll need to have all your data to hand, but as well as entering data directly via on-screen facsimiles of the official forms, there's a so-called Simplestep mode that takes a much simpler questionnaire approach. You can switch between the two modes as required, and if you used

Taxcalc in 2007, start by importing that information rather than re-entering your employer reference, address details and so on. You can then, if you want, compare this year's figures with last as you go.

In our tests, Taxcalc made entering basic data very easy indeed, with no need to wade through often irrelevant questions on the off chance that they might need to be answered anyway, or a zero figure entered. Tax calculations are made and data saved automatically as you go and we particularly liked the ability to share out income – such as interest from joint investments – automatically, rather than having to calculate this manually.

Other nice features include the option to mark entries as provisional, perhaps while you're waiting for a statement or advice, access useful tax saving tips and help in filling out the form. You can also send in anonymous returns for the Acorah support team to troubleshoot if problems arise.

There's also full support for capital gains calculations where information captured via Simplestep is used to create the schedules needed to accompany the main form. However, you still need your wits about you. For example, we mistakenly reported a massive capital gains loss when, in fact, we'd made a profit – remember, this isn't an expert system.

When it comes to filing itself, it's possible to test the service before submitting it for real, with instant confirmation when the final return is submitted. You can also generate a paper copy, if you wish. Naturally we'd recommend the online route and Taxcalc if you don't already have software of your own. Just make sure you do it early in case the server crashes under the strain – as has been known.

Alan Stevens

Verdict

Pros HMRC-approved; on-screen forms and Simplestep questionnaire modes; ability to calculate and include capital gains schedules; can handle a variety of forms

Cons No substitute for informed tax planning advice; online filing may be available in your existing accounting software package

Overall Simplifies online filing of HMRC tax returns, but check first whether you've got software that does this already

Features ★★★★★

Ease of use ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price From £24.99

(£21.27 ex Vat) for Taxcalc 2008 Personal 6

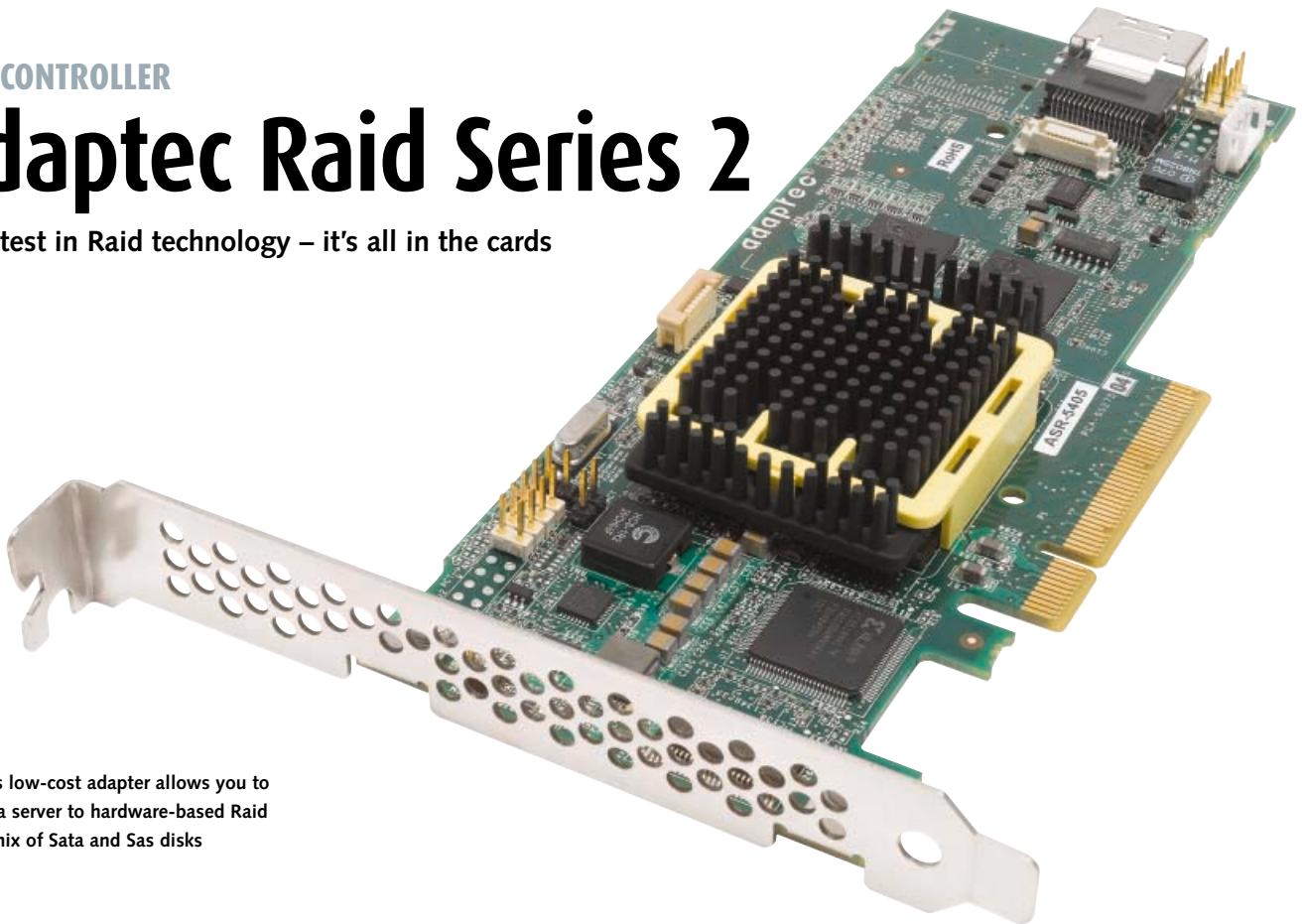
Contact Acorah Software
0870 766 9935, www.taxcalc.com

System requirements PC with 450MHz Pentium II processor or better • 128MB Ram (512MB for Vista) • 100MB free disk space • Windows 98SE, ME, NT 4.0, 2000, XP or Vista • Internet Explorer 6.0 or later • Internet access

RAID CONTROLLER

Adaptec Raid Series 2

The latest in Raid technology – it's all in the cards



Adaptec's low-cost adapter allows you to upgrade a server to hardware-based Raid using a mix of Sata and Sas disks

Adaptec recently added a couple of new low-cost products to its line-up of unified serial adapters, designed specifically for use in entry-level servers and workstations. Part of the Adaptec Series 2 Raid family, these enable small businesses to add support for hardware-based Raid using the same technology found on more expensive enterprise adapters, and to do so using both Serial Attached SCSI (Sas) and cheaper Serial ATA (Sata) disks.

There are two adapters to choose from: the Raid 2405 we were sent, which has four internal ports, and the Raid 2045 with four external interfaces. Both are low-profile (MD2) cards designed to be fitted into an x8 PCI Express expansion slot with a single small form factor connector for disk attachment.

Several cables are available to attach the disks to the card, ours shipping with an internal fan-out lead (included as part of the kit) to connect directly to four Sata/Sas disks. Others allow the card to be used with hard-wired backplanes and external storage enclosures, with support for enclosure management if required and up to 128 disks in total using cable expanders.

Sata/Sas tape drives can also be managed by the adapter, which offers up to 3Gbits/sec throughput using either technology. You can also mix Sata and Sas disks together, although overall performance is dictated by the slowest, and identical disks are recommended.

The driving force of the Raid 2045 is an 800MHz dual-core Raid-on-chip (Roc) processor, which is mounted in the middle of the adapter behind a large heatsink. There's 128MB of DDR2 cache available to speed up disk writes and support for Raid Level 0 (disk striping), 1 (disk mirroring) and 10 (striping across multiple Level 1 arrays). There's no support for the

more sophisticated Raid Level 5 arrays found on the high-end adapters, but you do get online capacity expansion, enabling extra disks to be added without having to recreate an array, plus hot-plugging and hot-sparing. You also get 'copyback hot sparing', where the contents of a hot-spare disk are copied back to a later replacement automatically.

The installation procedure is much the same as for other Adaptec cards – fit the adapter, cable up the disks, then boot the server and use the onboard Bios utility to configure and format your arrays. Alternatively, a copy of the Java-based Adaptec Storage Manager utility is included in the box, along with drivers to enable arrays to be accessed by all the leading operating systems, including Windows Server 2003/8, Red Hat and SUSE Enterprise Linux, and Sun Solaris 10.

It's all pretty straightforward, but you need to make sure you have enough space for the disks, as entry-level servers are often restricted. We tested the adapter in a Dell Poweredge SC440, for example, which only had three available bays and no support for hot-swapping without taking the cover off.

Another consideration is that most small businesses looking for Raid will specify it as an option when ordering a new server. That said, there are good reasons for retro-fitting this kind of adapter. For example, you may want to take advantage of the latest high-speed Sata/Sas storage technologies on older systems or improve performance and reliability by switching from software to hardware-based Raid. In which case, Adaptec's new low-cost Series 2 controllers are hard to beat, offering the same single chip technology found on the company's enterprise adapters in a package that won't cost the earth. *Alan Stevens*

Verdict

Pros Hardware-based Raid; can mix Sata and Sas disks; wide platform support; easy to configure and manage

Cons No support for Raid level 5

Overall An affordable way of upgrading to the latest in serial Raid technology, but something of a specialist buy

Features ★★★★★

Performance ★★★★★

Value for money ★★★★★

Overall ★★★★★

Price £152.75

(£130 ex Vat) for Raid 2405 kit with fan-out cable

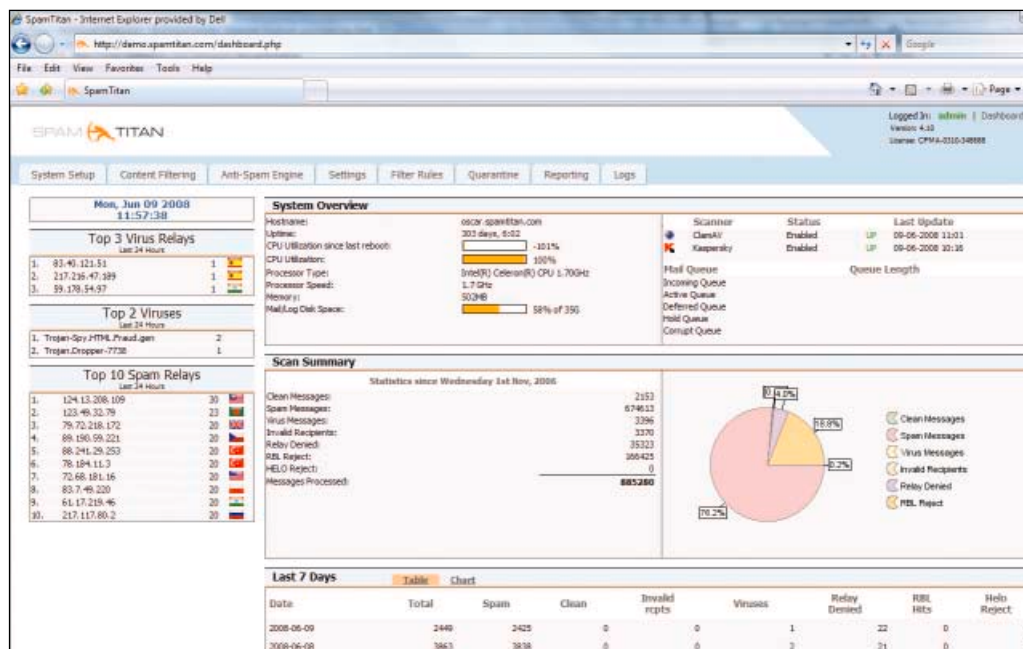
Contact Adaptec 01276 854 528, www.adaptec.com

Specifications Low-profile MD2 adapter • x8 PCI Express interface • 800MHz dual-core Raid-on-chip (Roc) processor • 128MB DDR2 cache • Four Sas/Sata interfaces • Up to 128 devices using expanders • 3Gbits/sec throughput per port • Raid Level 0, 1, 10 • Online expansion • Hot-swapping; hot-sparing

EMAIL SECURITY

Spam Titan

Say no to spam with this virtual appliance



Spam Titan can be run as a virtual appliance on a VMWare host, with remote management via a Web-based console

There are plenty of anti-spam tools available, some software-based and others self-contained hardware appliances. Spam Titan uniquely bridges this divide and offers a range of additional features that make it a good fit for the small business.

The most notable characteristic of Spam Titan is the way in which it is implemented, as a ready-to-deploy software-based appliance, complete with a custom host operating system (FreeBSD). Moreover, it can be downloaded and run as either an ISO CD-ROM image for installation on a standalone server/PC, or as a virtual machine for use with VMWare. Either way, you get to choose and size the hardware yourself, rather than pay for what might be an under- or over-powered platform. There's very little to install, making Spam Titan quick and easy to evaluate and deploy.

Spam filtering is the raison d'être behind Spam Titan, with the software taking a multi-layered approach to trapping unwanted and offensive advertising, phishing scams and so on. It employs a large number of tools and techniques to give a high success rate, the vendors also claiming fewer than 0.03 per cent false positives. It can also filter viruses from incoming and outgoing messages using two anti-virus scanners, ClamAV and Kaspersky Labs, as well as filter content and attachments and append disclaimers to messages.

User management of quarantined messages is another key feature, with users receiving a regular report (Spam Digest) that shows trapped messages with hyperlinks to enable them to be released or deleted, and for senders to be added to the system whitelists. This helps reduce the amount of support required, leaving network administrators time to fine-tune the software using the logging and reporting options.

We downloaded the virtual machine version (180MB zipped) and installed it on a dual-core Windows PC running VMWare Workstation. Spam Titan can also be deployed using the free VMWare Player or Server tools. The whole process took around 10 minutes, the only glitch being a mismatch between the quick-start guide and what we actually had to do to set the server IP addresses.

The appliance is designed to act as a gateway between an in-house mail server and the internet. It can be used with any SMTP server, including Microsoft Exchange, and some firewall forwarding and, possibly, DNS MX record changes will be required. However, with that done all that was left was to point it at our mail server, configure the domains we wanted to handle (multi-domain support comes as standard), turn on the optional recipient verification feature and set it to work.

The GUI is easy to navigate with a clear dashboard display to start with, showing the current status of the appliance and what it's been doing. Usefully, most of the options are turned on by default, but there's still quite a lot that can be modified and tweaked with – for example, facilities to define and apply security policies on a per-domain or per-user basis.

The process is not difficult, but a fair amount of technical expertise is needed to get the best results, which for most small businesses means either swotting up or employing a specialist.

You should also bear in mind that a lot of email servers now come with anti-spam and anti-virus tools as standard, and these may turn out to be a simpler and cheaper alternative, especially for the smaller organisation.

Alan Stevens

Verdict

Pros VMware virtual appliance or ISO image deployment; layered anti-spam technologies; two anti-virus engines; user-driven quarantine management; straightforward web-based GUI

Cons Documentation could be improved; many email servers now include their own anti-spam and anti-virus scanning tools

Overall An easy-to-deploy and manage email security appliance that's likely to appeal to larger companies

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Ease of use ★★★★★
Value for money ★★★★★

Overall ★★★★★

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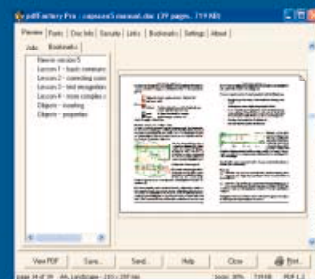
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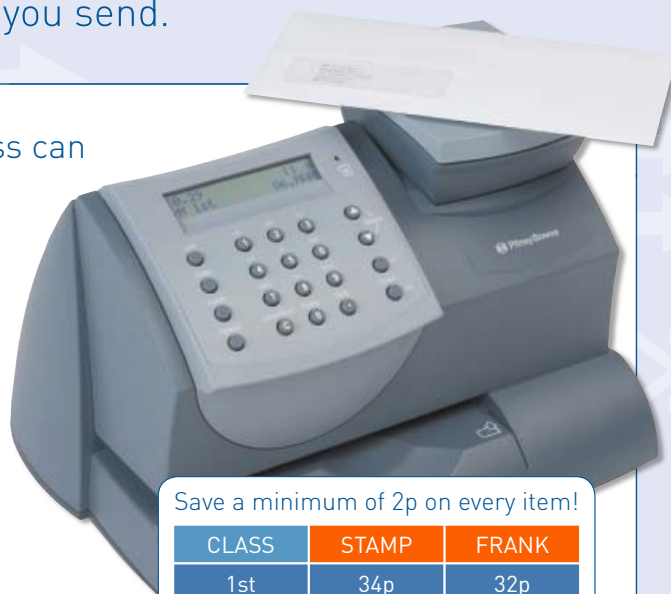
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GET YOUR HANDS ON INFO

This month's Hands On section kicks off as usual with a selection of your problems and solutions from our experts. You'll find the email addresses for the team on page 139 and we're always keen to know what you'd like to see explained.

There's a wealth of information from our columnists, including a meditation on the meaning of nothing in Databases, a look at how to save time with common photo-editing tasks in Digital Imaging and in Hardware you can find out how TV can be streamed around the home.

Linux makes an appearance in the Networks column this month, as well as its more usual home, and database topics crop up in Spreadsheets and Web Development. In Word Processing there are more page layout tips, we look at satellite cards in Performance and tackle the issue of Outlook's curious printing habits in Windows.

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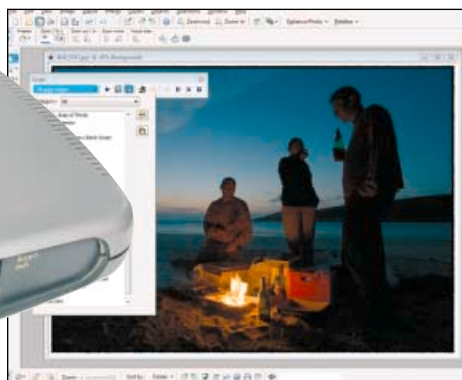
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Left: Hauppauge's Media MVP can access TV recordings made with SageTV on any TV in your home (see page 140)

Right: Paint Shop Photo Pro X2's actions live on the Scripts toolbar (see page 148)

Advice from our experts

PCW's experts solve your PC problems

JobID	EndDate	Today's Date	A Fortnight Ago
1	09/05/2008	18/05/2008	04/05/2008
2	12/05/2008	18/05/2008	04/05/2008
3	12/05/2008	18/05/2008	04/05/2008
4	14/05/2008	18/05/2008	04/05/2008

Record: 5 of 5

DATABASES

Q How can I find all the jobs that have been finished in the last fortnight in Access?

Andy Mott

A Access comes with a raft of date manipulation functions and we'll use two of them to solve this problem.

The first is Date(), which, not unreasonably, returns the current date. Simple. Now if we want to find all the dates in the last fortnight, we'll have to identify the date that was 14 days ago. For this, we can use the DateAdd function. Despite the name, it can also subtract dates.

DateAdd takes three arguments, all of which are required. The first defines the time interval you want to add or subtract (we'll use 'd' for days) and the second is the number of these intervals you want to add/subtract. A positive value will return dates in the future, so we'll need a negative value to return a date in the past. To go back a fortnight, use -14.

We need to tell the function the date from which to start counting: we'll use Date(), which, as we know, returns today's date. So the expression: **DateAdd("d", -14, Date())** will give us the date a fortnight ago.

Finally, we're looking for dates between these two, so we also use the **Between... And** construction. Essentially we need to say, 'Find all the dates between a fortnight ago and today', which we

can now render as:

BETWEEN DateAdd("d", -14, Date()
) AND Date()

(Key: < code string continues)

If you add the field containing the job end dates into a query grid and on the Criteria: line write that expression, it should return all jobs with an end date within the last 14 days, plus any for today.

The SQL (with a couple of additional diagnostic columns) is:
SELECT JobID, EndDate, Date()
AS [Today's Date],
DateAdd("d", -14, Date())
AS [A Fortnight Ago]
FROM Job
WHERE EndDate Between
DateAdd("d", -14, Date()) And
Date();

And the answer table should look something like screen 1.

HARDWARE

Q I have a P4 with 3GB of Ram running XP Home SP2. It takes about two minutes to open the desktop, and a further five before the hard disk stops spinning and I can do anything other than play Freecell.

I've just come back from a local college's computer room where they have a similar configuration, apart from using XP Professional SP2. However, these computers were fully up and running in less than two minutes, and programs such as Word open instantly, whereas mine requires considerable disk spinning

The result of the query, with extra fields to show that it's working

even to open Explorer. I noted the college computers had 32 running processes, whereas mine has up to 54 during boot-up, dropping back to 48 when all is finished. I also run Apache server on my machine.

I've tried uninstalling some programs – often unsuccessfully – but wondered what else you'd suggest to speed up the process? Would a new graphics card help, as I'm running a Rage Fury Pro/Xpert 2000 Pro, which I've had for several years.

Barrie Potter

A You've diagnosed the problem already. Your PC sounds like it's considerably more clogged up with processes during startup than those at the college, so as you suspected, some spring cleaning is definitely in order.

First, check your Startup folder and delete any icons for programs you don't want or need during startup. You may want to go one step further and uninstall unwanted programs altogether; those that are causing problems may uninstall more easily in Safe Mode.

To see what services are launching at startup, click Run from XP's Start menu and enter msconfig. Under the Startup tab, you'll find a list of everything that's loaded as your

'Running Apache is having some impact on your startup times'

computer starts, so uncheck any you no longer need – this can sometimes require a degree of experimentation. We should also warn you, though, that running Apache is having some impact on your startup times.

Beyond this, it's worth checking how much space is free on your hard disk. A disk that's full to the brim can run much slower than one that has room to breathe, so again delete or archive anything that you don't need and consider defragmenting your hard disk afterwards.

Create movies on single-layer DVDs

DIGITAL IMAGING

Q I am interested in recording movies across two or more standard 4.7GB DVDs instead of onto a dual-layer, Blu-Ray or HD DVD disc.

I have several DVD creation programs, including Pinnacle Studio 11, but I cannot figure out how to create a film on two DVDs rather than just one. I compile my own movies from clips, and I also want to archive – for my personal use only – some of my DVD collection. Unfortunately, though, my DVD player – the one that is plugged into the TV, not the one in my PC – has a problem with dual-layer DVDs, hence my desire to record a longer movie across two 4.7GB DVDs.

I generally store my movie clips as either AVI or MPEG2 files, and my DVD archives on my PC as copies of the files on the original DVD – for example, BUP, IFO and VOB files. Can you help?

Iain Dalling

A If you're compiling the movies from clips, the simplest solution would be to limit the total file size to 4GB. If you don't want to go back to the original clips and re-author DVDs, you can split your archived VOB files into smaller chunks using Virtualdub, then record these to single-layer 4.7GB recordable DVDs.

As far as dual-layer DVDs are concerned, there are a number of applications that will do this – a search for 'DVD copy' will provide any number of alternatives. The better ones offer options for re-encoding the content so that it will all fit on one single-layer disc, or splitting it across two.

Some of these applications are designed for creating 'personal backups' of commercial DVDs. You don't say whether your DVD collection includes commercial DVD movies, but you should be aware that in the UK, it is presently against the law to make copies of commercial DVDs – even for personal use.

This may sound extreme, but in the long term, you may also want to consider wiping your hard disk and reinstalling Windows from scratch. We often find this is quicker overall than tweaking and spring cleaning for hours, and the result can literally feel like having a new PC.

As for your graphics card, it may be an older model, but it won't affect your startup times. If you want better 3D performance, then upgrading it will make a huge difference, but for general office applications or 2D games, a new graphics card won't have much impact.

Q I read with great interest your article on boosting mobile performance in the May 2008 issue of PCW. I'm sorry to sound ignorant, but I can't find the described Resource Monitor anywhere on my laptop. I run Vista Home Premium – is the Resource Monitor you wrote about supplied with this version?

Peter Blake

A Vista's useful Resource Manager should also be included with Home Premium. To access it, first right-click the Taskbar at the bottom of the screen, then choose Task Manager from the menu and click on the Performance tab. You should find a button to launch the

Resource Monitor at the bottom right of this tabbed window.

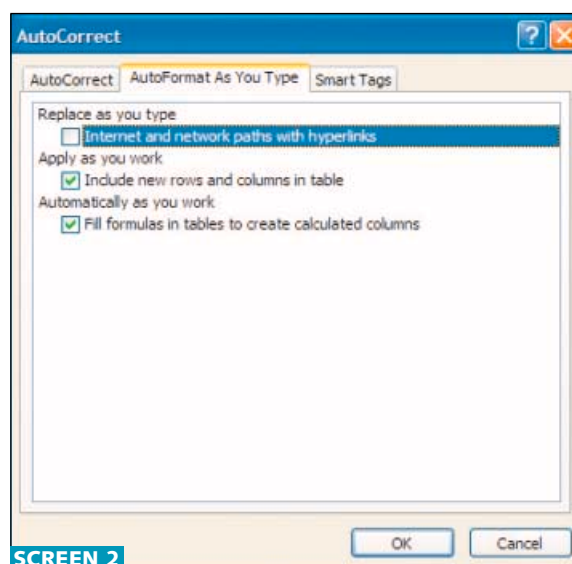
As discussed in May's issue (see www.pcw.co.uk/2214339), Resource Monitor can be a great tool for finding out how hard your Vista system is working at any time.

We used it in that issue to measure hard disk activity when trying different options to accelerate the startup process.

INTERNET

Q A few years ago a professional web designer told me that Google had stopped using meta tags to index

Formatting
hyperlinks as text



SCREEN 2

pages. Was this just wrong or is the situation more complicated?

PCW's recent article on this also talked about the use of keywords in file names. In some cases, the desired name would be two words, such as Disk Drive. Is the recommendation here to go for a single word instead, to concatenate the words, to separate them using underscores or simply to use a filename including spaces after all?

Alec Ross

A We don't recommend using spaces in filenames on websites; it results in nasty URL translations full of '%20'. Using keywords does appear to help, although of course, Google's lack of openness about how to calculate your site's rank makes it hard to be absolutely sure. Some sites give the advice that Google will recognise hyphens – the minus sign – to delimit words, but doesn't recognise underscores, so we'd suggest those. Also remember that it's often advisable to make page names memorable and simple for visitors to type.

We'd also suggest using Google's webmaster tools and trying a few tricks of your own to see how it affects the rating of pages on your site. And remember that while Google is certainly the market leader, it's not the only search engine that people may use to find you, so even tricks that don't work with Google are worth trying if they're able to pick up hits from elsewhere.

LINUX

Q I'm using Ubuntu on my computer and have a few files in RAR format I want to open. On Windows I can download a shareware utility to open the files, but what can I do in Ubuntu?

David Bullon

A The archive graphical tool included in Gnome (File Roller) can handle RAR files, just like TAR and Zip files. In order to work with them, you must have the RAR and UNRAR utilities installed, which are not included due to licence reasons. But you can download them.

In a terminal window, run the command 'sudo apt-get install unrar' (only UNRAR is necessary to open RAR files). If you've installed the Ubuntu Restricted Extras, this step isn't necessary, as these tools are

included. Once installed, just click on the RAR file as usual to open it.

SPREADSHEETS

Q Whenever I enter a text string containing '@' into a cell, the cell is automatically formatted as a hyperlink so that when clicked, my email editor starts a new message. How can I stop this from happening?
Harvey Wallace

A One solution is to precede your entry with a single apostrophe. This tells Excel to format the cell as text. It's also a good way of entering phone/part numbers starting with a zero. Alternatively, deselect 'Replace as you type, Internet and network paths with hyperlinks' under Excel's Autoformat As You Type options (see screen 2).

Q I find the Convert function doesn't tell how many acres there are in a furlong. Is there an Excel formula for that?
Casey Williams

A An acre is a measurement of area and a furlong of length, but they are very much related. A furlong, from 'furrow long', is the length of the traditional layout of an acre, 220 yards long by 22 yards wide. So when you ploughed a furlong in days of yore, you had reached the end of one acre.

Q Using conditional formatting, I can highlight a minimum value in a

single Excel column. How can I highlight the whole same row?
David Kilburn

A If your data table looks like screen 3, click on cell B2 and in the formula box under Conditional Formatting, enter: **=SE2=MIN(\$E\$2:\$E\$10)** Select your choice of formatting. Now, using the Format Painter tool, apply the Conditional Format of cell B2 to the entire range of A2:E10 (see screen 3).

Q If I have a large amount of text in an Excel cell, the Formula Bar expands to include it and blocks the view of the top of the worksheet. Is there any way that I can work around this?
Chrissy Richmond

A In Excel 2007, you can click the chevron at the far right-hand end of the bar and it will toggle to show one line of the text or all of it. You can also do this with the keyboard shortcut Ctrl & Shift & U.

Although the Formula Bar becomes deeper, the worksheet drops down clear of it (see screen 4). You can also drag the bottom of the bar down, or drag it to the left to expand it.

In versions prior to Excel 2007, you can either leave some dummy rows at the top of your worksheet or turn off the Formula Bar on the View menu.

Q On an Excel spreadsheet for calculating one month's worth of bio-rhythm data, I

	A	B	C	D	E
1		Round 1	Round 2	Round 3	Over
2	Bob	72	73	74	3
3	Dot	73	79	77	13
4	Gus	74	72	80	10
5	Meg	75	80	79	18
6	Pam	75	69	73	1
7	Peg	73	69	76	2
8	Ron	74	73	74	5
9	Sam	75	79	77	15
10	Sid	73	79	77	13
11					
12					

Extending a conditional format to a whole row

have in cell A1 a heading date such as 'April 2008'.

Is there any way that I can get this date to automatically appear as part of a title heading in a graph using Excel 2002?

For example, the graph title might be 'Bio-rhythms for April 2008' – from this, I can then print out just the graph and not the whole spreadsheet with the required date and data on it, which I don't really need anyway.

Les Finch

A If your chart is on a separate sheet and your data table is on Sheet 4, click on the title box and in the Formula Bar enter: **=Sheet4!\$A\$1**

This assumes April 2008 is entered as a date using the Custom format mmmm yyyy, although you could enter it as text. Similarly, to avoid having to concatenate, you could add a text box to the chart, near the title, and in the Formula Bar enter:

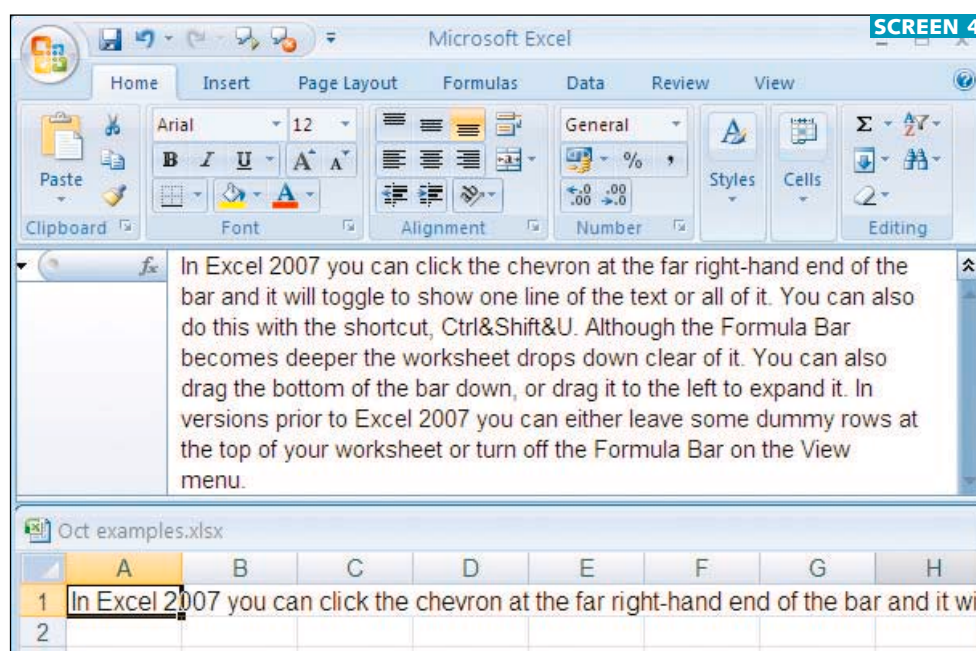
=Sheet4!\$A\$9

if cell A9 contains the text 'Bio-rhythms for'.

Q With a new computer, I've upgraded from Office 2000 to 2007. However, existing workbooks open without any of the colours, graphs and tables. I get a message saying that Excel 'found unreadable content' in the file. In the short term I can continue to use Excel 2000 on my old PC, but is there another solution?

Richard East

A When I buy a new computer I always keep the old one with its software, but have a look in the Excel 2007 help file for the article 'Use Office Excel 2007 with



earlier versions of Excel'. It offers a number of solutions.

WINDOWS

Q Is it possible to make the window close, minimise and restore buttons smaller in Windows XP, or is this bound inextricably with a 'theme'? I quite like the silver XP theme, but the large buttons look like something from my grandchild's toy box.

William Cole

A Indeed it is. If you open Display Properties, then turn to the Appearance tab and click the Advanced button – you'll find you can fine-tune the theme. This dialogue hasn't changed much since Windows 98 and still shows the 'Classic' look, but don't let this deter you.

Don't be put off either by the message that any windows and buttons settings other than Classic will override custom settings: this isn't true. If you select 'Active Title Bar' from the Item list (or just click on the title bar of the Active Window in the sample above), then you can reduce the size. We find a value of 22 shrinks both the title bar and the buttons to more elegant dimensions (see screen 5).

There's much more you can change in the way of fonts, scroll bars and so on. Don't be afraid to experiment, as you can put everything back the way it was from the Themes tab by choosing the Windows XP theme.

WORD PROCESSING

Q I recently did a clean re-install of Windows XP plus applications, which included Office 2000 Premium. When I came to use Word, I found that the Thesaurus was not in the Tools menu – only the Spellchecker was there.

I consulted Word Help and attempted to install the Thesaurus via the link in the Help file. I thought I had done it, but the Thesaurus is still absent. I've patched my Office installation up to SP3 and have also installed the file converter to enable me to read Office 2007 files.

David Davies

A As far as we know, the Thesaurus command doesn't appear in the top level of the Tools menu (although you can use Tools, Customise to put it there), but it should be present in the Tools,

Language submenu. Shift & F7 will also summon it.

Q I use tables in Word extensively and need to set column widths very precisely. When using Word 97, I had no difficulty with this. But now with Word 2003, I find that whenever I alter the width of one column, all the others change in sympathy. How can I regain the control that I used to have?

David Purchase

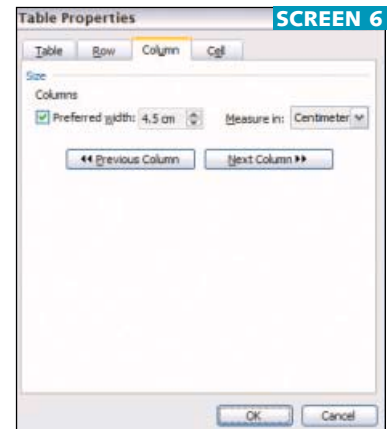
A The best way to do this is through a dialogue rather than by dragging. Right-click in a column you want to set, then select Table Properties. Turn to the column tab and you'll find you can set the width to within 1mm (see screen 6). Use the Previous and Next Column buttons to set the width of the other columns.

Q In a Word 2003 document, I inserted a picture and then set its text-wrapping option to be 'Behind text'. I'd now like to alter it to make it fainter, so that the text stands out more. However, I can no longer select the picture – only the text on top of it. How can I get at the picture?

Janet Chisholm

A If you open the Drawing Toolbar, then click the cursor-shaped arrow near the left of the toolbar, you can select the picture – or any other object that is hard to get at. Having made your changes,

Setting Word 2003 column widths precisely to within 1mm



click on the same button again to return to normal text selection. If anyone has this problem in Word 2007, click on 'Editing' at the right-hand end of the Home Ribbon, then 'Select', then 'Select Object'.

Q When I write a letter in Word 2003, I often find that it goes on to a second page just before the end. So, for example, there's just 'Yours sincerely' and my name on page two. I seem to remember reading in PCW some time ago about a quick fix for this, but can't remember the details. Any chance of a reminder or am I imagining this?

Patrick Connelly

A You didn't imagine this – it's been around since at least Word 97. If you go to File, Print Preview, you'll see a button showing three 'pages' with a little curved arrow at the top right. This is the 'Shrink to fit' button that does exactly what you want – altering font sizes slightly to remove the last partial page. **PCW**

Fine-tuning the XP theme



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Windows win@pcw.co.uk

Word processing wp@pcw.co.uk



Gordon Laing has been a hardware enthusiast since his first Sinclair ZX80 and as a former editor of PCW and contributor for over 10 years, what he doesn't know about technology isn't worth knowing.

→ Comments welcome on the Hardware column.

Email hardware@pcw.co.uk

Please do not send unsolicited file attachments.

TV around the home

How to stream media content and cut recorded programmes down to size

This month we're taking a look at streaming recorded TV shows throughout your home, revisiting the subject of padding on TV recordings, and finishing with a tip about devices that recharge when connected to a USB port.

Streaming TV recordings

Robert Green wrote to the Hardware column to ask about media streaming. "Can you explain how to set up a PVR (personal video recorder) so that its recordings can be watched on different TVs around the home? I'd like to do the same with my DVD movies."

We'll deal with that second question first. Copying DVDs onto a computer so you can either play them around your home or shrink them for use on portables involves defeating their encryption, which is illegal in the UK. Even if it was legal, there's also the issue of breaking their copyright. So both laws prevent us from discussing how to do it in *PCW* (though future changes may permit such 'format shifting', and we'll revisit the topic if they do).

As for TV shows, the time-shifting exemption in UK copyright law permits you to watch a programme you've recorded at a time more convenient for you, after which you are expected to delete it; it specifically doesn't include making an archive for repeated viewing. So for the purposes of this article, we'll assume you haven't already watched the programme and simply want the flexibility of choosing where you'll view it in your home.

The easiest way to distribute recorded TV throughout your home is with a PC and, while it's possible to transfer recordings from some domestic PVRs (most notably using the Topfield models and advice from



SCREEN 1

SageTV is a popular front end for media PCs and is available for Windows, Linux or Macintosh systems

www.tuppy.org.uk), it's easier if the PC that's doing the sharing also does the recording to start with.

Ideally you should dedicate a PC to the task of recording, storing and distributing TV shows – it can then, in effect, become a media server for your home. We have discussed recommended hardware specifications in previous columns and DIY Media PC articles in *PCW*, so will stick to the basics here.

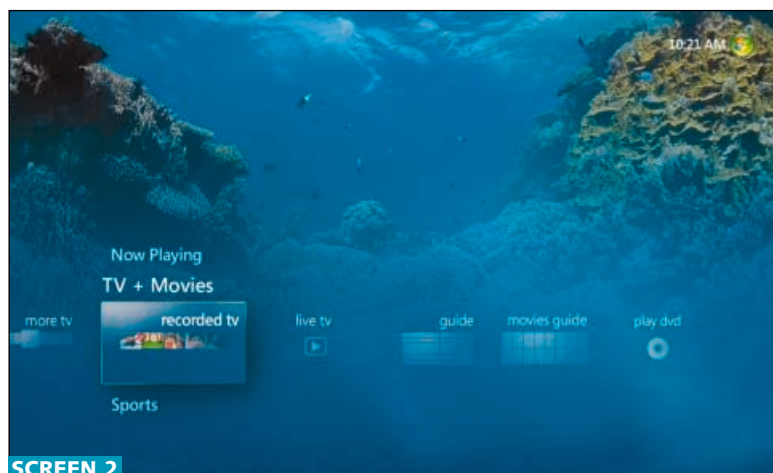
The PC itself doesn't need to be a top-spec model, although TV shows will eat through hard disk space, so the more storage you have, the better. In order to receive and record TV on your PC, you'll need to equip it with a TV

tuner card designed either for terrestrial or satellite broadcasts; some modern cards support both types and may even have dual tuners, allowing them to record two different channels at the same time. See this month's Performance column for more details on recording the new Freesat satellite TV service.

Next you will need software to schedule recordings and there are plenty of options. Two of the most popular choices are Sage TV and Microsoft's Windows Media Center. Both use electronic programming guides (EPGs) to view TV schedules and mark desired shows, and both support the use of optional extender devices for viewing recordings, listening to music or watching photos in different rooms.

Sage TV (see screen 1) costs around £45 from www.sage.tv and supports the choice of two extenders that let you watch your recorded TV in other rooms over a wired Ethernet network: the Hauppauge MediaMVP unit for standard-definition playback and the STX-HD100, which also supports high-definition playback. Sage TV wouldn't ship the HD unit to the UK at the time of writing, but

Microsoft's Media Center software can also be used to watch and record TV shows on PCs equipped with a suitable TV tuner



SCREEN 2

Tranquil PC sells it, as well as the standard-definition models, for £149 ex Vat and £69 ex Vat, respectively; see www.tranquilpc.co.uk.

Media Center is built into certain versions of Microsoft's operating system and cannot be installed separately – so if you want it, you're looking at installing the appropriate version of Windows from scratch. The latest version of Media Center (see screen 2) is built into Windows Vista Home Premium and Windows Vista Ultimate.

The most powerful and arguably best-value extender device for use with Windows is the Xbox 360 console, which costs from £149 and includes DVD playback along with gaming capabilities. The 360 can output selected HD formats with an optional cable, and can be linked to a wireless network with an optional adapter. You can even use the 360 to view Media Center's EPG and schedule new recordings.

Remember that while dedicated extender devices offer a consumer-oriented experience for streaming media from your PC, there's nothing stopping you simply opening a media file using a networked PC in another room. This can work well with laptops that have wireless connections, as they effectively become portable extenders.

Laptops – or other PCs – also have the least issues with file compatibility, as you can simply install the appropriate codecs to make them work. In contrast, most extender devices can only decode certain media formats, so if you have an existing collection of music or videos, ensure the device you're considering is compatible. Protected music files can cause problems with some extenders, as can video formats such as DivX and MKV.

If building your own media server sounds too much like hard work, you might want to consider buying one that's already built for you. Tranquil PC offers pre-built systems running Microsoft's Windows Home Server to take care of the backup and sharing aspects, and models with Sage TV running on top to provide TV recording facilities.

For more in-depth information about building and maintaining a digital home, check our special feature in *PCW* June 2007 (see www.pcw.co.uk/2189086).



The Hauppauge Media MVP can be used to access TV recordings made with SageTV on any TV in your home across a wired network

Unwanted padding

In July 2008's Hardware column we discussed how the few minutes of padding on either side of TV recordings to ensure you don't miss the beginning or end can end up consuming a great deal of disk space over time. So when it comes to archiving shows, while many may think compression is the natural solution to save space, by editing out the padding, plus any commercial breaks, you could end up freeing as much as 30 to 50 per cent of your capacity.

Prompted by this article, reader Alan O'Brien sent in a tip about an update for the Humax PVR, which can eliminate the need for padding in the first place. "I have a Humax PVR 9200T I bought in April 2006 following a *PCW* review. To avoid missing the beginning or endings of shows, I've been setting the padding to five or 10 minutes, but as stated in July's edition, this extra time can end up using a lot of storage space.

"In the past few months, though, there has been an 'over the air' software upgrade, which added a number of excellent new features. One of these works in conjunction with a signal that's transmitted by some channels when programmes start and finish, which can be used by an updated Humax to know when to start and stop recording. To use this, you have to turn off the 'padding'. You then just select the programme you want in the EPG.

"Having used the Humax with the software update for several months, I've found it very reliable. Programmes are recorded just about when they start and finish. Not all channels seem to transmit the recording data but all the shows I've been interested in have. The EPG shows programmes with the feature in a different colour so you know when it is going to happen.



Microsoft's Xbox 360 may be best known as a games console, but it can also be used as an extender device with a Windows Media Center Edition PC

"Among the other new features following the software update is 'series link'. When you select a programme in the EPG that is one of a series, the PVR asks if you want to record just this instance or every episode.

"Also useful is the new ability to re-order the list of recorded programmes. Previously you were stuck with the oldest first. Now you can choose the newest first, as well as other options. You can also now delete programmes in the programme list, rather than having to wade through a separate menu system."

This sounds like a useful update, although once you've disabled global padding to access it, any shows that don't employ the signal will require manual adjustment to their start and end times to avoid missing anything.

The Humax 9200T is one of just a few PVRs where it's also possible to transfer its recordings onto your PC, after which you can subsequently edit them. The recordings are transport streams, or TS files, which can be edited and converted by software such as Mpeg Streamclip. This can top and tail files, convert to MPEG2 for making a DVD (though note the restrictions of the Copyright Act in that regard), and convert to other formats too, such as AVI or H.264 for portable media players; it will also handle files in the .rec format used by files transferred from Topfield PVRs.

Mpeg Streamclip is a free download from www.squared5.com and VLC media player should play the TS files directly. Many thanks to Hands On editor and PVR enthusiast Nigel Whitfield for this information.

USB charging

Finally, thanks to Nikolas Rowland who wrote in with a handy tip about

devices that charge themselves using the USB port. "I just bought a Vizion MP3 player that does everything I wanted, but was disappointed to discover that it would only recharge its battery in a live PC USB socket, and not in a passive power USB socket as found on some mains or in-car charger adapters.

"By accident, I discovered a mains-powered USB hub can act as a standalone charger. Or, if the unpowered hub is plugged into one of those passive power-only sockets, it will also recharge the player using that power source. I have tried both a Belkin and a Targus hub successfully." **PCW**



Gordon Laing has been a hardware enthusiast since his first Sinclair ZX80 and as a former editor of PCW and contributor for over 10 years, what he doesn't know about technology isn't worth knowing.

→ Comments welcome on the Performance column.

Email performance@pcw.co.uk

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Freesat on your PC

Find out what you'll need to receive free satellite television on your computer

The launch of the Freesat TV service (see our feature on page 84) will undoubtedly spark an increase in the number of people using satellite receivers with their media PCs. In this month's Performance column, we'll look at what's required to watch and record Freesat transmissions with your PC, as well as point out the caveats and pitfalls at the time of writing.

Receiving the signal

The first bit of equipment you'll need to receive Freesat, whether with your PC or a traditional set-top box, is a dish. Existing Sky dishes will work, and if you have a twin- or quad-LNB model with spare outputs, you could run an existing Sky installation alongside one for Freesat.

If you don't have a dish, Freesat retailers can put you in touch with a local installer who'll fit one for a one-off fee. Remember you'll need an LNB output for every tuner, so if you're planning a dual-tuner configuration, you'll need two spare outputs.

Next you'll need a suitable satellite receiver card. At the time of launch, all Freesat channels, including BBC HD, were being broadcast using the established DVB-S standard, so any digital satellite card should receive them. One potential issue, though, involves the newer DVB-S2 standard, which Sky uses for its HD channels. It's possible that some or all of the Freesat HD channels may move onto DVB-S2 in future, which means tuner cards that only support DVB-S won't receive those channels.

This is a tricky one to predict – while the move to DVB-S2 for HD channels is likely in the long term, it may take years. However, many believe Channel 4 HD may continue to use DVB-S2 once its contract with Sky expires later this year. So to future-proof, you're really looking for a satellite tuner card that supports DVB-S2. A typical model



is the Hauppauge WinTV HVR-4000, a full-height PCI card that supports DVB-S2, DVB-S, DVB-T (Freeview terrestrial) and analogue TV. The HVR-4000 costs around £125, which is quite pricey if you want to use two of them in your PC (www.hauppauge.co.uk).

If you're willing to take a risk that DVB-S alone will suffice, there are several cheaper, smaller alternatives that offer multiple tuners. One is Black Gold's BGT3540, which has twin DVB-S, twin DVB-T and analogue TV tuners on a low-profile PCI Express card for £94 ex Vat (www.blackgold.tv).

Offering better value, albeit in a full-height PCI Express card, is Pinnacle's 7010i, an OEM package costing £31.99 ex Vat from suppliers like www.scan.co.uk that offers twin DVB-S, twin DVB-T and analogue TV tuners. Both these cards will work with Freesat, although they won't receive DVB-S2 broadcasts in future.

None of these cards are certified Freesat products and you shouldn't expect to receive the Freesat EPG (electronic programme guide) nor use its interactive services. But few, if any, Freeview TV tuners are certified and media PCs have long managed with third-party EPGs; just don't expect any technical support from Freesat should you use your PC to receive or record its broadcasts. Find out more about certification in the feature on page 84.

The Hauppauge HVR 4000 and a suitable dish can be used to receive and record satellite TV. It features support for DVB-S and DVB-S2, but the question is whether the latter is necessary for Freesat reception in the long term

What software?

Once you're receiving the signal, you'll need software to view and record shows. Windows Media Center is not natively compatible with DVB-S(2). Some DVB-S(2) cards come with virtual drivers that trick Media Center into working with them, but anyone wanting to use Freesat for its HD broadcasts will run into problems.

Freesat's standard-definition channels may be broadcast using MPEG2, but BBC HD on Freesat uses the H.264 codec – as will other HD channels when they launch. Sadly, Windows Media Center is also unable to handle H.264 natively, so it's not a sensible choice. Incidentally, lack of support for H.264 isn't an issue for HD broadcasts in the US, as these tend to use MPEG2 compression instead.

Luckily Cyberlink's Powercinema is up to the job; it works with DVB-S and H.264, is recommended by Black Gold for its BGT3540 card and comes supplied with the Hauppauge HVR-4000; see www.cyberlink.com. Alternatively, you could use DVB Viewer, which can receive, record and time-shift DVB-S broadcasts; see www.dvbviewer.com for details.

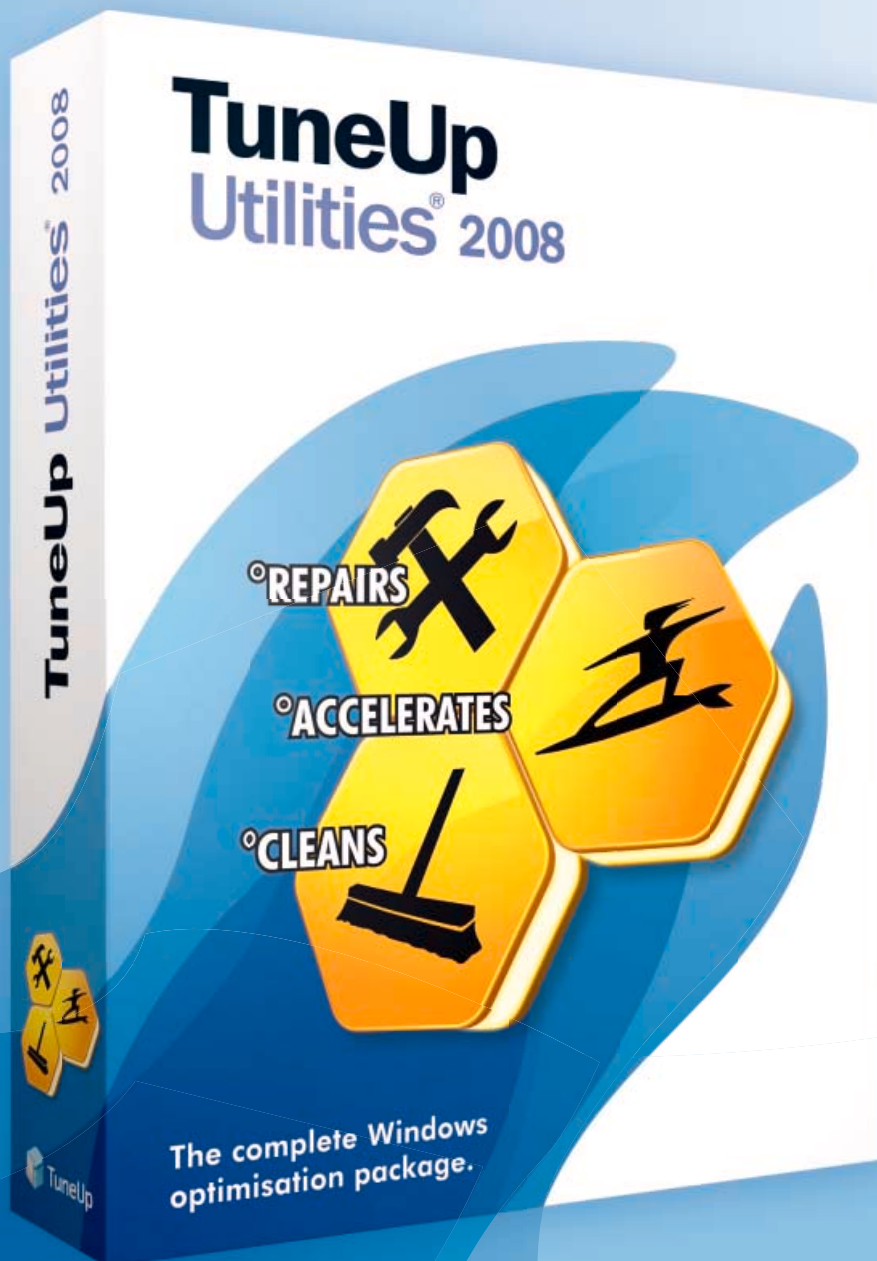
Finally, remember that while almost any modern PC is capable of playing MPEG2 video, the H.264 standard can represent a significant challenge. You'll need a PC with a fast dual-core CPU and a graphics card featuring hardware acceleration for H.264 to play it smooth.

Early days

It's still early days for configuring media PCs to work with Freesat. That said, we have no doubt it'll power the TV reception of many media PCs in future and we'll report back with more tips on getting it all working. In the meantime, there's some great advice at www.avforums.com and we'd love to hear your experiences. **PCW**

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→ Comments welcome on the Windows column.

Email windows@pcw.co.uk

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A Dim Outlook

An Outlook printing problem solved and Vista's peculiar behaviour in folders

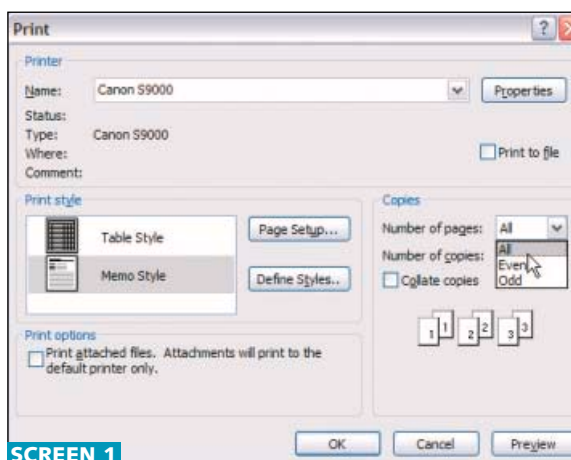
We don't usually cover Outlook (as opposed to Outlook Express) issues, but since it doesn't have a Hands On home and this is an important issue, we're making an exception.

When you print a mail message, you get the option to print all pages, odd pages or even pages (see screen 1). The humble Outlook Express has no problem printing a range or a single page – like most other applications – but the full majesty of Outlook can't manage it. Now, consider the number of emails that are replied to quoting the original message. And then the reply to the reply quotes, with only the first page or so containing any useful information. Outlook's business users seem to love doing this. So, when these messages are printed out, most of the paper and ink is wasted.

To quote a corporate user in a forum: "Everybody just throws away most of their stacks." A lawyer in another forum was more forthright: "I know my small law office has wasted many reams of paper just because of this feature... I often argue with the knee-jerk Microsoft haters, but this issue makes me think that Microsoft has made a conscious choice to cause serious damage to the environment rather than spend the corporate resources necessary to fix the problem."

So, apart from eschewing printing or avoiding Outlook completely, what can be done? There are several workarounds. One is to open the message, select all (Control & A), then copy and paste it into a word processor – Wordpad will do fine – and you'll be able to print whatever pages you want. Unfortunately, though, the message will be missing its header.

A better alternative is to view the message in your browser; regardless of your default browser setting, it will



SCREEN 1

Outlook's poor print options are a threat to the environment

summon Internet Explorer and you'll be able to use the standard Windows print dialogue to choose the pages you want. This won't work if the message is in plain text, rather than HTML – in the latter case, you'll need to edit the message and change it to HTML.

A third workaround is to print to a virtual device, such as a PDF creator or Microsoft XPS Document Writer, then output from the corresponding reader to the printer. We found this gave the best results, using either PrimoPDF with Foxit PDF reader or Microsoft XPS Document Writer on its own. All three applications are available free – the first from www.primopdf.com, the other two from PCW downloads (www.pcw.co.uk/downloads). All the workarounds entail a fair bit of fiddling, and even if people know about and remember them, there's still

going to be an awful lot of wasted paper, ink and toner until Microsoft remedies the problem.

Alternatives

For a variety of other reasons, I don't use Outlook for mail. For most of my email, I use an old-school application called Ameol, originally designed for the CIX conferencing system. Despite its age, it has one killer feature in that it 'threads' messages – if you send me a message and I reply, then my reply shows up in my inbox branching off your message: further exchanges extend the chain, looking rather like nested folders in Windows (see screen 2). This keeps a correspondence together without the 'you quote my message, I'll quote yours' snowball effect mentioned above.

For some other purposes I use Mozilla Thunderbird. Unlike Outlook, it can print a single page, but it didn't have a calendar. But it does now, in the form of an add-on called Lightning 0.8, which you can find at www.mozilla.org/projects/calendar/lightning.

It is based on the Mozilla Sunbird Calendar and adds a calendar and task list to Thunderbird (see screen 3). There are lots of Outlook-style features, such as reminders, and it's a must-have for organised Thunderbird users.

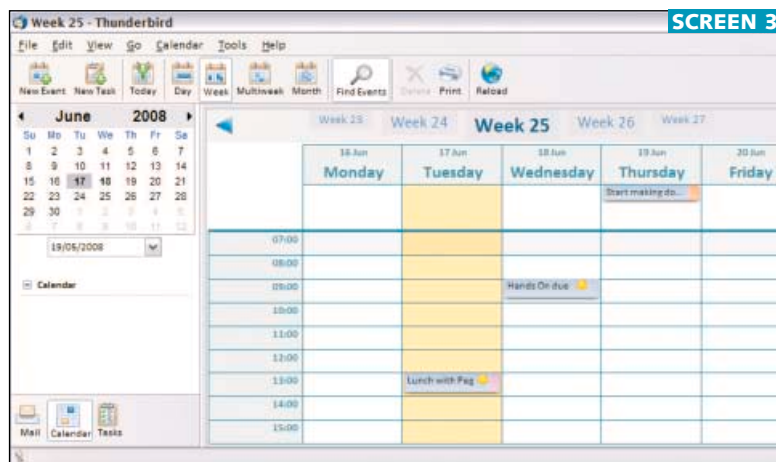
Artist? What artist?

Forgetting Explorer view settings is a fine Windows tradition that goes back

Number	Name	Subject
6451	To: support@pschmid.net	RibbonCustomizer Professional -
6452	support@pschmid.net	RE: RibbonCustomizer Professional -
6453	To: support@pschmid.net	RE: RibbonCustomizer Professional -
6464	support@pschmid.net	RE: RibbonCustomizer Professional -
6465	To: support@pschmid.net	RE: RibbonCustomizer Professional -
6475	To: support@pschmid.net	RE: RibbonCustomizer Professional -
6476	support@pschmid.net	RE: RibbonCustomizer Professional -
6478	To: support@pschmid.net	RE: RibbonCustomizer Professional -
6477	support@pschmid.net	RE: RibbonCustomizer Professional -
6480	To: support@pschmid.net	RE: RibbonCustomizer Professional -

SCREEN 2

Ameol threads messages for ease of use



Thunderbird now has a calendar called Lightning 0.8

to Windows 95. But Vista adds some original twists to this. Two separate queries came in this month concerning Vista's imaginative use of column headings in Explorer. Terry Hart found that Vista Explorer would show headings of Artist, Album, Genre and so on, even when there were no music files in a folder – and similarly, Date Taken, Tags and so on when no image files were there.

JL Goldberg had both image and video files in the same folder and wanted to sort them by type. The problem was that 'Type' was not among the 'Sort by' options on a right-click. He said: "I have to go into More... and tick type, then choose sort by type. This is a pain since Vista never remembers to leave Type on the list."

Vista has an astonishingly long list of headings or categories and exposes these as options in a variety of places. The right-click menu, as JL Goldberg notes, has a 'Sort by/More...' option and (should you have menus visible) 'View, Choose details...' also gets there. According to my count, there are over 250 possible categories (see screen 4) including Birthday, Mood, Middle Name and Assistant's Phone. To get all of these showing at the default width, you'd need a window 9,000 pixels wide.

Vista comes with a number of folder templates that present appropriate header categories for contents such as music files or photos. It will do this automatically, so if you assemble a folder full of, say, JPEG files, it should give you the columns for Name, Date Taken and Tags.

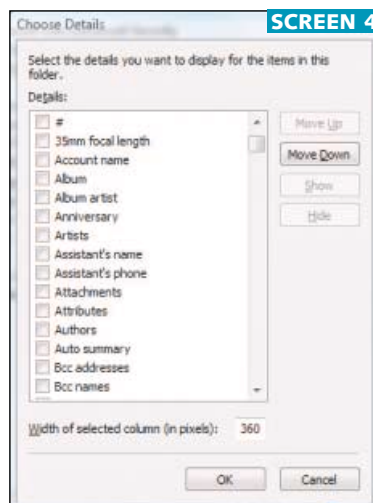
A new folder of music files should have Name, Artist, Album and so on. However, this doesn't always happen. I've just created a new folder, copied some JPEGs into it and just got the Name column. And sometimes it

seems to happen spontaneously and inappropriately, with random folders with neither image nor sound files showing the music or photo headings.

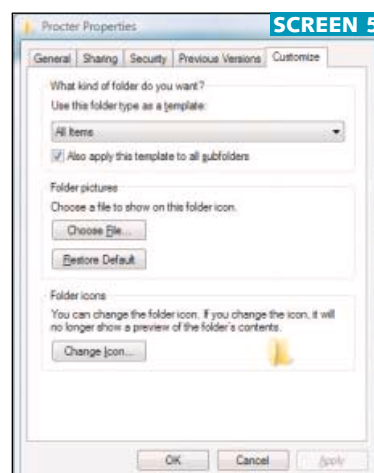
Fortunately, this isn't hard to rectify. Right-click in a blank part of the folder and choose 'Customise this folder'. If you choose 'All items' from the list of folder-type templates (see screen 5), then the column headings will revert to the standard Name, Date Modified, Type, Size headings. Unlike previous versions of Windows, the column headings stay put in any view, not just details. This may seem rather bizarre, but it does mean you can sort or group files in any view by clicking on the headings.

If you're exasperated enough to want to stop Vista guessing what kind of folder template you want, you can turn off 'folder sniffing' entirely.

Make a System Restore point and go through whatever UAC formalities are necessary to run REGEDIT. Navigate to HKEY_CURRENT_USER\Software\Classes\Local Settings\Software\Microsoft\Windows\Shell\Bags. In the right-hand pane, right-click and chose New Key. Name this key AllFolders. Under AllFolders, create another key named Shell, and under that create a String Value (again by right-clicking) named FolderType. Next, double-click on the new FolderType and give it a value of NotSpecified. This will stop the



Vista can display more than 250 categories



automatic template assignment – all new folders will conform to the 'All Items' template. However, you'll still be able to apply a different template or customise a view manually.

XP can develop a similar problem, in that the Common Tasks shown in the left pane of Explorer aren't appropriate for the contents – for example, you may get Picture Tasks on a folder full of MP3s. The cure is very similar. With the folder open, choose 'Customise this folder' from the View or right-click menu. You'll then see a variety of templates: it may take some experimentation to find the most appropriate of the music and picture templates.

You may also want to get rid of the Music tasks. As far as we can tell, there are only three: Play All, Copy to CD and Shop for Music Online. The first of these doesn't offer anything you can't do from the right-hand pane, the second assumes you want to use Windows Media Player to copy the music and the third – well, try it once and you'll find that it is labyrinthine and broken. So, just apply the Documents template and these tasks will disappear.

If you want to get rid of Common Tasks entirely, this is simple to do. In Explorer, go to Tools, Folder Options and on the General tab select 'Use Windows Classic folders'. You can still use the left pane – also known as the Explorer bar – to switch between Folders, Favourites, History and Search, but when you click the pane's close button, it actually closes, freeing up space for file display.

Short and sweet

In June's Windows column, I mentioned dragging the column dividers in MSCONFIG 'outside the box' in order to read long entries. Ian

Brame came up with a more elegant solution. Double-click the separator bar to the right of the column of interest, and this will automatically resize it to accommodate the widest value. This method also works in Explorer. **PCW**

Set a folder to the standard columns



Barry Shilliday has worked with computers for almost two decades. By day, he is a Linux and Unix consultant, but in his free time he prefers to travel the world – and snap it with his camera.

→ Comments welcome on the Linux/Unix column.

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Sulphur vs Hardy Heron

Discover the differences between two of the most popular Linux distributions

The spring of this year saw a number of interesting new releases for Linux. The major distributions do not synchronise their releases as such, although significant versions tend to come out together in clumps. In April came Mandriva 2008.1 (known as 2008 Spring) and Ubuntu 8.04 (Hardy Heron). A little later, in May, came Fedora 9 (Sulphur) and in mid-June, OpenSuse 11.0.

Mark Shuttleworth, chief executive of Canonical, the company that develops Ubuntu, has called for a more formalised release synchronisation between not only Linux distributors, but also the main software projects. This would include the gcc compiler collection, the KDE and Gnome desktops, and more. His view is that synchronisation would enable the distributors to achieve standardisation, with each distribution using the same software base.

As things stand, each main distribution has very much in common with the others, as well as some significant differences. This includes the kernel itself; for example, Ubuntu 8.04 and Mandriva 2008.1 both have the 2.6.24 release (with their own sets of patches), while Fedora 9 and OpenSuse 11.0 have the newer 2.6.25 (again with different patches). Since the desktops themselves are usually based on the same version, first appearances can lead to the assumption that the underlying software is more or less identical, too.

However, with so many packages from different projects, that's usually far from the truth. Shuttleworth's suggestion is certainly an ambitious one, but it has sparked interest in the process and benefits of synchronised releases, and may lead to some progress in that direction.

In this column, I have regularly featured Ubuntu and, more so in the past couple of months, Fedora. These two distributions are the leading ones outside of commercial and enterprise use. As mentioned above, both have made recent releases and it can be confusing to people – not just those new to Linux – which distribution to use. As popular choices, we'll take a look at Fedora 9 and Ubuntu 8.04, and at some of their differences, drawbacks and benefits.

Along came Sulphur

Fedora has come a long way since its earlier 'Fedora Core' releases. With Fedora 8 came a change in the way the distribution was organised; the confusing separation between 'Core'

and 'Extras' was removed, and now there is a single, large combined repository of official software for each release. Fedora has, for a long time, been considered more cutting-edge than its counterparts. This is especially true with the latest release.

Fedora 9 (Sulphur) has the latest versions of just about all its software. KDE 3.5 has been dropped as a desktop option, with KDE 4.0.3 offered instead, along with some fallback KDE 3.5 applications for those that are not yet provided or ready in KDE 4.0. This has proved a controversial decision, as many believe KDE 4.0 is far from ready for general use, and Fedora's initial configuration of KDE 4 leaves a lot to be desired. Of course, this situation should improve with updates.

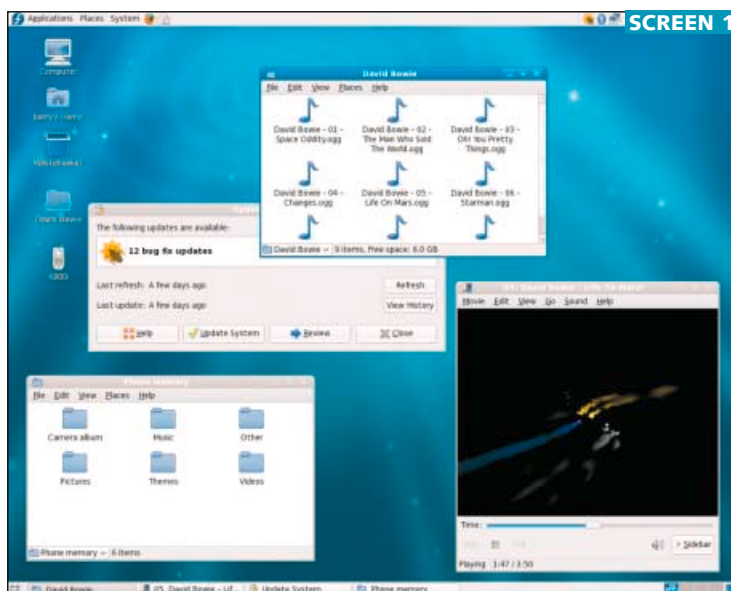
Gnome, on the other hand, is installed as a polished and stable desktop in Fedora 9. The visual theme has been updated a little since the last release, and the backdrops made a bit more striking.

As with Fedora 8, the backdrop switches to slight variations depending on the time of day. Firefox 3.5 beta 5 is included as the web browser. Although a beta, the Firefox development releases have been considered highly stable for a long time, and the benefits of much lower memory usage, faster rendering and countless other improvements all outweigh the beta label. Firefox will, of course, be updated with future releases.

Missing out

Fedora follows a very open-source philosophy: no proprietary software is included, nor any software affected by software patents. In practice, this leads to problems, particularly with multimedia playback and 3D graphics. There are no official supported or unsupported repositories to add that fix this. However, there is the

Fedora 9 lets you browse files on a mobile phone over Bluetooth, and play Ogg Vorbis audio files



third-party livna repository (<http://rpm.livna.org>) that provides all of this useful and – for a general desktop machine – pretty much essential software. It's just unfortunate that Fedora does not include any reference to this repository itself, although as an unsupported and unofficial one, that is perhaps understandable. The one exception here is for MP3 playback; a codec from Fluendo can automatically be downloaded and installed free of charge if you attempt to play an MP3 file in Totem, Gnome's audio and video player.

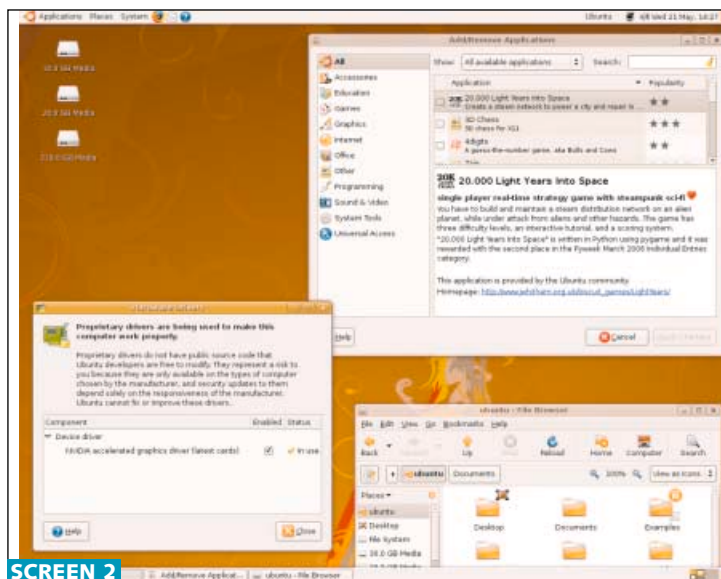
Other cutting-edge software includes the latest pre-release of X.org, the low-level graphics system. While this brings many benefits, it also introduces the problem that no proprietary drivers were available at the time of release. Consequently, for the majority of users, no 3D acceleration is possible. Future driver releases from ATI and Nvidia will fix this, and these drivers may have been added to the livna repository by the time you read this. However, it is another drawback of using the absolute latest software, and one that may encourage many people to hold off for a while.

A very popular new feature in Fedora 9 is the ability to boot from a USB memory stick. What's more, you can now set up a persistent data area on the stick, too, allowing you to save changes to the operating system and keep your data between reboots. An installation utility is provided for Windows users, while in Fedora itself, a command-line utility is available. The existing data on the USB memory stick does not need to be overwritten, and, as long as the PC has a Bios that supports booting from the devices, there should be no problems in setting this up. With access times comparable to a hard drive, this is an excellent alternative to the slow process of using a live CD.

Long-term Hardy Heron

As regular readers will know, Ubuntu follows a six-month release cycle. Although a new release will follow in October, this one differs in that it is a Long Term Support (LTS) release. This means that it will receive full support for the desktop for three years, while the server applications will receive five years' support.

Hardy is the second LTS release, the previous being Dapper Drake back in 2006. However, while you might



SCREEN 2

Ubuntu 8.04 allows you to install drivers and add extra software with ease

expect this to be a very 'safe' release, it does contain a few brand new features that should mature over the next few months.

Ubuntu comes in three main flavours – the standard Gnome desktop, the Kubuntu variation with KDE and Xubuntu with XFCE. Although these are official variations, only Ubuntu receives the full focus of attention, and it is by far the most polished and reliable. From a desktop perspective, Ubuntu 8.04 is very similar to Fedora 9; for instance, the Gnome desktop is the same 2.22.1 release and Firefox 3 beta 5 is provided as the web browser. However, Ubuntu has a number of extra features that Fedora does not. The Hardware Drivers utility (formerly Restricted Drivers) pops up on installation, offering automatic download and installation of any hardware detected on the system that can benefit from these drivers (see screen 2). This is exceptionally useful for people new to Linux; a single mouse click will install the correct video drivers, for example.

In Fedora a single large repository contains all the available software, Ubuntu maintains three separate ones: a main repository for all officially supported software, and two for community-supported software and anything affected by patents. In the past, these had to be enabled manually, but now this is mostly hidden from the user by the Add/Remove Applications utility, which enables them for you and allows you to search through all available software.

For the past few releases, Ubuntu has offered a product that will

download and install several useful packages affected by copyright or patents, including support for multimedia formats Adobe Flash and Java. This package, Ubuntu Restricted Extras, makes the post-installation tasks a trivial matter. In addition, if you have not installed these extras and you try to play a multimedia format that requires one of the packages, the Totem player will offer to install the support for you. With Fedora, this works for

MP3 files, but with Ubuntu it works for almost any format.

New to Hardy is 'Wubi', a method of installing and uninstalling Ubuntu from within Windows. This is not a virtual machine, where a copy of Linux runs inside Windows. Instead, the Linux files are stored on the Windows filesystem, but the PC boots directly into Linux. The main benefit here is that it is a great way for Windows users to try an installed version of Linux without having to repartition their hard drive. There are a few minor problems – performance is slower, and you cannot suspend the computer, for example – so this is currently recommended as a way to try out Linux, rather than a full alternative to a normal installation.

So, Sulphur or Hardy?

There is no clear winner between Sulphur and Hardy. As is often the case with Linux distributions, where one excels, it lacks a feature that another provides well. Fedora includes the latest software, a polished Gnome desktop, and a way to boot and use the system from an inexpensive USB memory stick. At the same time, the software is so new that this can cause problems in some areas, although in the next few months many of these issues should disappear.

Ubuntu offers the new Linux user much greater assistance; the utilities for adding hardware drivers and software restricted by patents are tremendously useful to many. With its long-term support option, it may also be a very good base for those who do not wish to upgrade their computer for a year or two. **PCW**



Ken McMahon is a freelance journalist and graphic designer. His involvement with digital cameras began with a Commodore 64. He graduated to Macs and now works mostly with PCs.

→ Comments welcome on the Digital imaging & video column.
Email digitalimaging@pcw.co.uk
Please do not send unsolicited file attachments.

Automate common tasks

Life doesn't have to be a chore – your photo editor can do plenty of the drudge work

According to a UK bathrooms retailer, people spend more than a year and a half in the loo in a lifetime. Naturally, it's a little longer for women, but men spend more time than they used to in the loo too, clocking up an impressive one and three-quarter hours a week, which adds up about two weeks of your life down the pan.

If you're looking for tips on how to cut down on your bathroom visits without compromising on personal hygiene, I'm afraid I can't help. What I'm trying to say is that we all spend a lot of time, possibly more than we realise, doing the same thing repeatedly.

In the case of photo editing at least, you can cut out a lot of repetition by using scripts to automate common photo-editing tasks such as resizing pictures, converting file formats or adding a digital watermark.

Many people avoid scripting because they think it will be complicated. But recording a script often involves little more than pressing a Record button prior to doing whatever it was you were planning on doing in the first place. And once done, you'll never have to do it again.

This month, I take a look at some of the things you can do with scripting, including which applications support scripting and where you can download ready-made scripts for common and not so common photo-editing tasks.

Photo editors that support scripting include Adobe Photoshop, Corel Paint Shop Pro, Ulead Photo Impact and Gimp. And Photoshop Elements will also play (but not record) Photoshop Actions – more about that later.

Photoshop Actions

As well as providing the means for the recording and playback of scripts, applications usually come with a supply of ready-made scripts for you to



try, which can usually be adapted to suit your specific requirements. You'll find Photoshop's Actions in the Actions palette (see screen 1). In all likelihood, you'll find something here that does what you want – there are several folders of actions, including image effects, frames, text effects and textures. If you can't see these folders in the Actions palette, select them from the Actions palette pop-up menu.

Paint Shop Pro scripts

To see Paint Shop Pro scripts, select View, Toolbars, Script to display the Scripts toolbar (see screen 2). All the available scripts are displayed in the pop-up menu. They include the One Step Photo Fix and Smart Photo Fix options normally accessed from the Adjust menu. There are also scripts for adding edges and frames, applying effects, channel splitting and Exif captioning, among others. I'll take a brief look at recording and editing Paint Shop Pro scripts towards the end.

Gimp Scripts Fu

Gimp scripts use a scripting language called Script-Fu, a dialect of a Lisp variant called Scheme. If that means anything to you, you'll be looking forward to editing Gimp scripts and

Some of the many actions that ship with Adobe Photoshop

writing your own. If it doesn't, don't worry, there's a growing library of Gimp scripts that are easy to install and use.

Unlike the other applications mentioned here, Gimp doesn't allow you to record commands to create a script, so unless you can write your own, you're limited to downloading and using existing scripts written by others. Being open source, there's no shortage of these. Windows Gimp 2.4 scripts are located in C:/Program Files/GIMP-2.0/share/gimp/2.0/scripts, (if Gimp isn't installed on your C drive, substitute the appropriate drive letter in the path) or in the location specified in the Folders/scripts section of the Preferences panel.

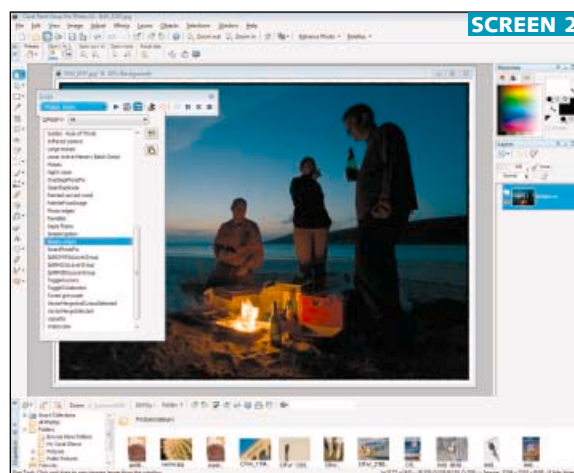
Because the menu location of Gimp scripts is determined by the author and they tend not to be put in the same place, they can be difficult to track down. Open the script file you're looking for, and on the last line you'll see something like this:

```
(script-fu-menu-register <
"script-fu-old-photo"
"<Image>/Filters/Decor")
```

(Key: < code string continues)

This tells you what the script is called and where to find it. If you still can't see it on the appropriate menu,

Paint Shop Pro Photo X2's actions live on the Script toolbar





tell Gimp to read the script locations by selecting Toolbox, Xtns, Script-Fu, Refresh scripts.

Actions in Elements

At first glance, Photoshop Elements doesn't appear to support Actions, but with a little coercion, it can be made to dance to Actions' tune. Although you can't record Actions in Elements, you can download and use some Actions that have been created by and for Photoshop users. Not all Photoshop Actions will work in Elements, as some make use of Photoshop tools and features not supported in Elements. Many, however, will work perfectly.

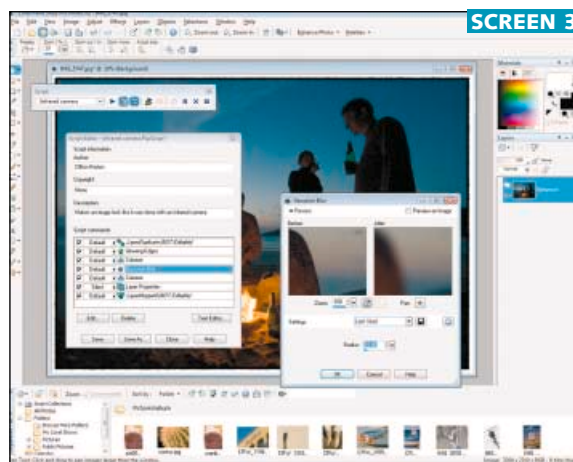
In Photoshop Elements up to version 4, Actions can be run through the Styles and Effects palette. This involves creating a 64x64 pixel PSD file to serve as a palette icon for the action. The .atn action file should be placed in the Program Files\Adobe Photoshop Elements x\Previews\Effects folder. Next you need to delete the three cache files – CatagoryCache.che, ListCache.che and ThumbNailCache.che – from the Program files\Adobe Photoshop Elements x\Previews\cache\effects cache folder. When you relaunch Elements, the caches are rebuilt and your new actions will appear in the Actions and Effects palette.

For version 5 of Photoshop Elements, go to C:\Documents and Settings\All Users\Application Data\Adobe\Photoshop Elements\5.0\Photo Creations\special effects. Create a folder here called actions and put your .atn files in it. This folder will appear on the Special Effects menu of the Artwork and Effects palette. You'll still need to create a thumbnail file for each action, but it isn't necessary to delete the cache files as these are rebuilt each time Elements 5.0 is launched.

You can find out more about using actions in Photoshop Elements and other undocumented aspects of all versions of Elements on Richard Lynch's website at www.hiddenelements.com.

What can scripts do?

A script is simply a sequence of commands, so you can use scripts to do almost anything you'd do manually. There are some things that are difficult to accomplish with scripts because they require judgement. Colour balancing or levels adjustments, for example, need you to make qualitative judgements. Another thing that can throw a script is image size.



SCREEN 3

You can edit individual commands in an action using PSP's controls

On a 50x50-pixel image, a 10-pixel border is a thick line. On a 10-megapixel photo, it's barely noticeable.

There are two ways you can handle this with scripts. One is to produce scripts to deal with specific problems or images. Alternatively, you can halt your script to request user input, so that where a colour or levels adjustment is made, the script opens the relevant dialogue box and waits for you to make the adjustment. This requires your supervision and takes longer, but does allow for more flexibility – and it's still far preferable to doing everything manually.

If you're looking for a script for something specific, first check your photo editor's built-in scripts, then take a look at the web resources, as there's a good chance someone has produced a script that will do the same thing, or similar, which you can edit.

Script resources

Photoshop Actions

Do a web search for Photoshop Actions and you'll find plenty. Here are a couple of places to get started:

<http://tinyurl.com/3dldtj>
 Adobe Photoshop Exchange has literally thousands of downloadable actions.

www.visual-blast.com/photoshop/124-free-photoshop-actions
 Free Photoshop Actions – photo cube effect, skin softener, spiral-binder and postage stamp effect.

Paint Shop Pro scripts

www.sheilsoft.com/psp.htm
 More than 60 PSP scripts for £5.

<http://home.roadrunner.com/~suzshook/8scripts.htm>
 A large collection of free scripts.

Gimp Scripts-Fu

<http://registry.gimp.org/>
 The Gimp plug-in registry also has scripts.

<http://gug.sunsite.dk/scripts.php>
 Gimp user group scripts.

Recording and editing scripts

Scripts that produce particular effects, such as ageing or metallic-type effects, can provide a useful tutorial role, as well as get the job done. For more straightforward tasks, such as resizing and file format conversion, provided your application has a script recording function (Photoshop, Paint Shop Pro, Ulead Photo Impact), recording your own is easy and takes a few minutes.

In Paint Shop Pro, press the Start Script Recording button on the Script toolbar to get on with it. When you've finished recording the script, press the Save button to save it and add it to the pop-up menu. If you take a wrong turn while recording your script, just undo it; when you save the script there's an option to remove undone commands and you can save materials settings and dialogue box positions.

As a security measure, Paint Shop Pro saves scripts in two locations – Scripts-Restricted and Scripts-Trusted, both of which are in Documents\My PSP Files. Make sure to save your recorded scripts in the Scripts-Trusted folder. Save downloaded scripts in the Scripts-Restricted folder until you are sure they do what they say they do. Scripts in the Scripts-Restricted folder cannot run certain commands, such as saving and batch processing.

To edit a Paint Shop Pro script, click the Edit Selected Script button on the Script toolbar. The Script Editor Window displays each command; select one and click on Edit to open the dialogue box and change its settings (see screen 3).

If you're familiar with the Python scripting language, you can edit Paint Shop Pro scripts directly in a text editor such as Notepad. You can do this by selecting the script in the Script Editor dialogue box and clicking Text Editor. Even if your knowledge of Python and scripting is scant, it's not difficult to hazard a guess at what lines like this do:

```
App.Do( Environment, \
'Colorize', {
    'Hue': 25,
    'Saturation': 100,
    'GeneralSettings': {
        'ExecutionMode': \
App.Constants.ExecutionMode. \
Default,
        'AutoActionMode': \
App.Constants.AutoActionMode. \
Match
    }
}
```

And there's nothing to stop you copying the script and experimenting by changing some parameters. **PCW**



Tim Nott is a full-time freelance journalist. When he's not writing about Windows and word processing, he tackles many other diverse subjects. He currently lives in France with his wife and family.

→ Comments welcome on the Word processing column.

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Creating columns and boxes

Make pages easier to read with columns and boxes, and a look at the OpenOffice beta

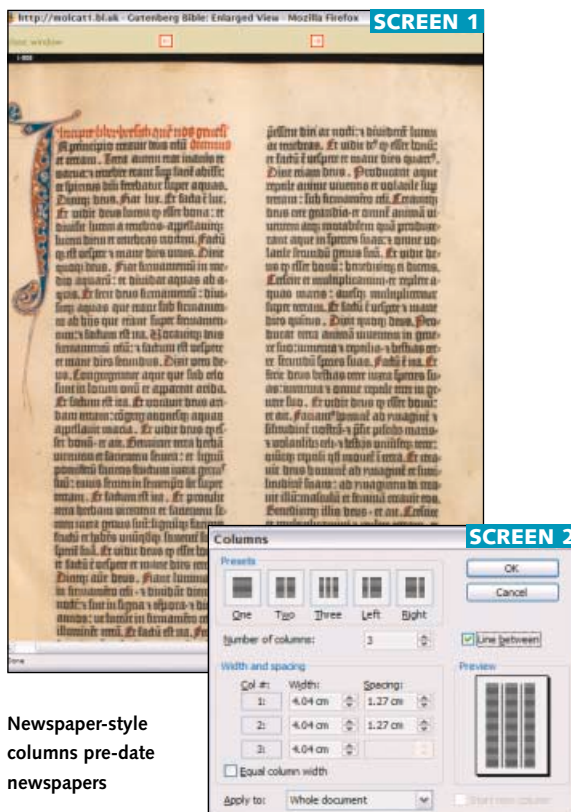
Last month we looked at several DTP-like features in Word, including getting pictures precisely where you want them, tweaking text wraps around graphics and using the drawing canvas to annotate a picture with call-outs. This month we'll take in two more powerful page layout features – columns and text boxes.

Newspaper-style columns – such as those you are reading now – are not just used to make page layouts more versatile – they're a major aid to legibility. If this page, for example, were set in one column, there would be about 25 words to a line. This would be difficult to read, as you'd need to make a conscious effort to stay 'on the line' without following it with a finger and sticking out your tongue a bit. So, type on wide pages has been set in 'snaking' columns since the 1455 Gutenberg Bible (see screen 1).

Creating text in columns is straightforward enough – the dialogue you get from Format, Columns... is self-explanatory (see screen 2). There are, however, a few things you should know that make columnar life much easier. First, although you can apply columns to a selection, it makes more sense to use continuous section breaks – this means, for example, that you can have a heading and subheading spanning the width of the page, followed by body text in columns.

Second, reading and writing in columns on screen is very tedious. The columns you see on news web pages, for example, are really tables – you should never have to scroll back up the page to continue reading a story. So, if you want to edit your text rather than lay out the page, switch to Normal or Outline view and the column format will (temporarily) disappear.

Avoid justifying text in narrow columns – with just a few words per



Newspaper-style columns pre-date newspapers

line, you'll get unsightly patches and 'rivers' of white. Having said that, Gutenberg made a pretty good job of it, but if you look closely (there are two copies at the British Library website, www.bl.uk), you'll find he used a lot of hyphenation.

As well as starting and stopping multiple columns (or changing column layout) using continuous section breaks, you can force text to move to the next column by inserting a break. Although widow and orphan control extends to columns – so you won't get the first or last line of a paragraph all on its own – there are occasions when you may want to force a break. Insert, Break, Column Break does just that. You can use this to 'balance' columns – say you have two and a bit columns on

the last page and you want to make them the same length. There's a much easier way to do this, however – insert another continuous section break at the end, which will balance the columns above it automatically.

Boxing clever

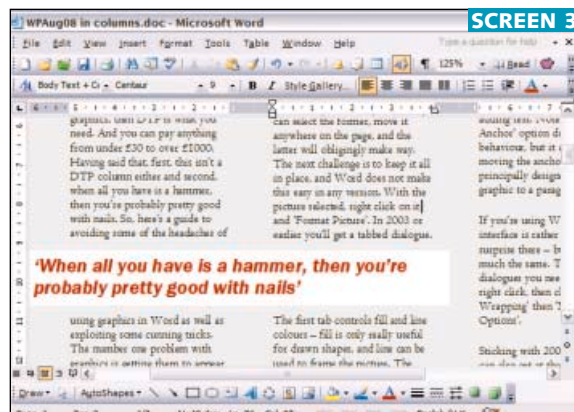
Most documents we create – letters, reports and so on – have a single linear text flow. But some things, such as headers and footers or foot and end notes, stay clear of this flow, keeping to their allotted place on the page.

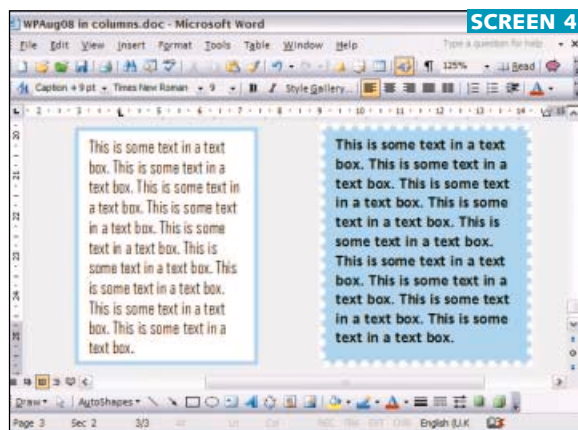
Text boxes are another way of separating text from the main flow, and they have all sorts of uses. You might want to 'box out' some text that explains a point that is tangential to the main subject. Or you might want to insert a 'pull quote' to entice potential readers with a juicy quotation from the main text – these work especially well when they span more than one column or extend into the margin (see screen 3).

The default text box settings are rather dull – you get a 0.75pt black line around the box. Right-click on the box and Format text box. On the Colours and Lines tab, experiment with thicker lines and other colours. Using a coloured fill with a white dashed line, for example, creates a

Creating columns is easy

Pull quotes lure the reader in





SCREEN 4

crenellated edge (see screen 4). You can also set the wrap options in exactly the same way as pictures, which we tackled last month. Some text boxes – such as the pull quote in screen 3 – have no border, being made to stand out just by using a different font and white space.

One little-known feature of text boxes is that they don't have to be rectangular. You can create any AutoShape from the drawing toolbar, then right-click on it and 'Add text'. Alternatively, with a normal text box selected, you can click on the Draw menu on the Drawing toolbar and 'Change AutoShape'. You can use pretty much any closed shape, but don't expect too much – the text itself retains rectangular margins within the shape.

When you're engaged in power user page layout like this, it helps to turn on formatting marks and text boundaries from Tools, Options, View. Having section and column breaks visible is a great aid to troubleshooting. This does, however, create a lot of clutter on the page, so if you want to see your pages in all their unencumbered beauty, switch to Print Preview. You'll find that with the Magnifier button deactivated, you can still edit text and move objects around.

Document shortcuts

Here's a handy way of saving your place in a Word document. Highlight some text and copy it to the clipboard. Then, with the focus on the Desktop, or any folder of your choice, right-click and 'Paste Shortcut'. Save and close the Word document. You'll then find double-clicking on the shortcut will start Word (if it isn't already running), load the document and highlight the chosen text: what happens is that pasting the shortcut creates a bookmark in the document, which is why you have to save the file before closing.

It's easy to jazz up
your text boxes

Notes in Writer
have been improved

Customise toolbar
button tooltips

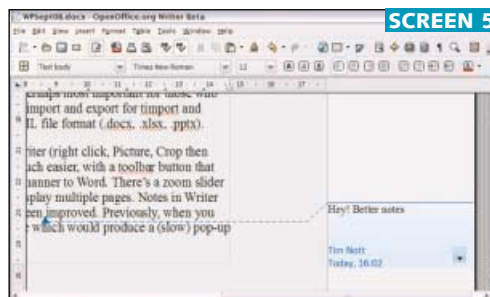
Opening the shortcut loads the document and goes to that bookmark, and you can have multiple shortcuts to different parts of the same document. If you just 'Paste' instead of 'Paste Shortcut', you'll end up with a Document Scrap – when this is double-clicked, Word loads with just the selected text in a new document. We haven't done exhaustive testing on this, but it doesn't seem to work in Vista and Office 2007 – the Paste Shortcut and Paste commands are greyed out in the right-click menu.

It works fine with Word 2003 and 97, plus Windows XP, ME and 98. With Word 2007 and XP, the Paste Shortcut command is active, but double-clicking on it produced an error message, though this may be because we had both Office 2007 and 2003 on the same XP PC.

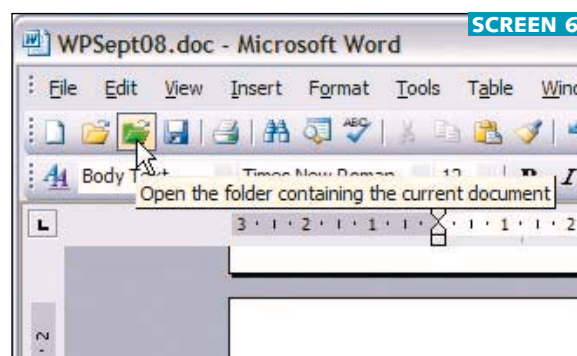
A new Openoffice

Fans of Openoffice will probably have heard there's a new beta version (3.0) that can be downloaded (145MB) from <http://download.openoffice.org/3.0beta>. Among its improvements is support for Mac OSX, version 1.2 of the ISO standard Open Document Format, and perhaps most important for those who come into contact with Microsoft Office 2007, import and export for the Office XML file format (.docx, .xlsx, .pptx).

If you've ever struggled to crop an image in Writer, you'll find this is now much easier, with a toolbar button that allows you to crop by dragging handles in a similar manner to Word.



SCREEN 5



SCREEN 6

There's a zoom slider – like that in Word 2007 – and the facility to display multiple pages. Notes in Writer have also been improved (see screen 5). Previously, when you inserted a note, you got a small yellow rectangle that would produce a (slow) pop-up when moused over or a dialogue when double-clicked. Now you get the full text of the note alongside the document – colour-coded by author – with an arrow connecting it to its target in the main text. There's also better language support and, apart from a few new button images, the interface is much the same.

Prettier tooltips

In July's column we mentioned Jean Eliot's problem with tooltips on macro buttons in Word 2003 and earlier. At the time we said these could be changed with a macro, but it was more trouble than it was worth. Further research indicates this was an exaggeration, so here's a very simple macro to change the tooltip assigned any button on any toolbar. As per our usual rough-and-ready code style, this doesn't contain any error-checking or other frills:

```
Sub ChangeTip()
```

```
mytoolbar = InputBox("Type <
Toolbar name", "Toolbar")
mybtnposn = InputBox("Type <
button position counting from <
left", "Position")
mycount = Val(mybtnposn)
mynewtip = InputBox("Type the <
new tooltip",
"Tooltip")
CommandBars <
(mytoolbar).<
Controls(mycount).<
TooltipText= <
(mynewtip)
```

End Sub

(Key: < code string continues)

As you've probably guessed, the macro

produces three input boxes in succession. The first asks for the name of the toolbar on which the button resides – this should be the name you see in the View, Toolbars submenu, but it is not case-sensitive. The second asks for the button number – from the left, starting at 1 – and the third asks for the desired tooltip text (see screen 6).

This works on any button, not just macros or other custom items, so use it with care. **PCW**



Stephen Wells is a freelance journalist and a regular contributor to computer magazines. He's been writing PCW's Spreadsheets column for over 10 years.

→ Comments welcome on the Spreadsheets column.
Email spreadsheets@pcw.co.uk
Please do not send unsolicited file attachments.

Sorting the patients

We stalk the mean streets of Excel for a solution that gives 20:20 vision

Optician Patrick Willets has asked for help creating an application for sending out reminder letters to his patients due for an eye exam.

Always interested in how comparable professionals' systems work, I dropped into our village opticians. The receptionist/secretary has worked for there for over 20 years. When she started, she took over the handwritten card index system of her predecessor.

Apparently, this system has always worked well and the surgery never wished to subject itself to the foibles of computers. Ah, well.

As Patrick has a simple Excel database of his existing patients and just wants to modify it, the place to start is to create a simple wish list. The first requirement is that the database lends itself to a Mail Merge with a Word letter. The second is that the system flags when a patient should be sent a reminder letter.

If each row of the worksheet holds a record for one patient, then the first seven fields of the database, or column headings of the worksheet, can carry the necessary elements of a postal address: Title; First Name; Surname; Street Address, Town; County; Postcode. That takes care of columns A to G.

The next field can be the date of the patient's last eye exam and the following field can record the optician's decision of when the next exam is due. This might be in a year or two. These two fields, in columns H and I, will be updated when the patient leaves after an appointment.

What is needed now is a formula to calculate the date to send out a reminder letter. The letter should give the patient two weeks' notice and is to be sent out after one or two years, depending on the entry in column I.

SCREEN 1

	A	B	C	D	E	F	G	H	I	J
	Title	First name	Surname	Street	Town	County	Post Code	Last	Due (Yrs)	Letter
1				17 Devon Road	Barley	Wessex	XY7 1HE	13/10/2007	1	27/9/2008
2	Mrs	Dot	Black	23 Durham Avenue	Copthorne	Wessex	XY8 2JU	8/10/2006	2	23/9/2008
3	Mr	Gus	Brown	12 Suffolk Close	Devereux	Wessex	XY9 3AS	9/10/2006	2	24/9/2008
4	Mrs	Meg	White	18 Hereford Road	Devereux	Wessex	XY9 4TY	8/9/2007	1	23/8/2008
5	Mrs	Pam	Green							

An extra day should be allowed if that date falls on a Sunday.

So that the formula doesn't become too unwieldy, it can be helpful to break it down between two cells. Well away from the database, say in column M, for the first record enter in cell M2:

=H2+IF(I2=1,351,IF(I2=2,716,0))

This formula takes into account the optician's decision as to when another

'So that the formula doesn't become too unwieldy, it can be broken down into two cells'

exam is advisable and gives the patient a reasonable amount of time in which to phone for an appointment. The posting date, allowing for Sundays, can be calculated in cell J2 with the formula:

=IF(WEEKDAY(M2)=1),M2-1,M2) (see screen 1.)

If the patient doesn't phone for an appointment upon receipt of the letter, the database maintains the record of their last appointment and when they were sent a letter. If the patient makes and keeps an appointment, then their entries in columns H and I are updated.

To create the letter, Patrick will use Word. I don't want to infringe on Tim Nott's territory, but there's a comprehensive article in the Word Help files headed 'Use Mail Merge to create and print letters and other documents'. To insert the patient's

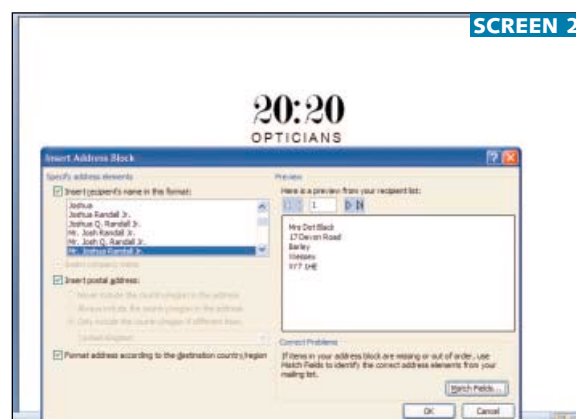
A simple database for sending out reminder letters

address on the letter, which can show through a window envelope, the relevant data fields from the database can be picked up (see screen 2). The Title and Surname fields can also personalise the salutation so that a letter can start out 'Dear Mrs Black'.

Every day someone can select the complete database – from cell A1 to the last cell in column J – and run a sort on the Letter field. This will advise them who should be sent a reminder letter next.

It's also worth mentioning that holding a mailing list like this for professional purposes comes under the Data Protection Act. As so many departments of UK Government have the software and authority to examine anything held on a computer these days, it's best not to ignore that. Such a database needs to be registered with the Information Commissioner's Office. There is an annual fee of £35, but generously this is Vat-free. For

Selecting the address fields for a Word Mail Merge letter



	A	B	C	D
1	5			
2	11			
3	22			
4	33			
5	55			
6	55			
7	99			
8	280	SUM		
9	40	SUM divided by 7		
10	40	AVERAGE		
11	33	MEDIAN		
12	55	MODE		
13	27.52	GEOMEAN		
14	16.94	HARMEAN		
15	40.00	TRIMMEAN		
16				
17				

SCREEN 3

more information, see
www.ico.gov.uk/tools_and_resources/register_of_data_controllers.aspx.

More than average

You can find the average of a series of values by totalling them and dividing the result by the number of values. For example, with five, 11, 22, 33, 55, 55, 99, the total is 280. Divide that by seven and the average is 40. To differentiate this from other types of averages, strictly speaking it's called the arithmetic mean: if the values are entered in the range A1:A7 of a worksheet, you can get the same result with the Excel function AVERAGE.

You could enter in another cell:
=AVERAGE(A1:A7)

Excel also offers other average functions (see screen 3). DAVERAGE returns the average of selected database entries. AVERAGEA includes text values in the calculation (text is counted as 0). Arguments containing TRUE evaluate as 1 and those containing FALSE count as 0.

If you want to find the number in the middle of a set of numbers, you would use the MEDIAN function. Here, **=MEDIAN(A1:A7)** spots that 33 is in the middle of the set. Half the numbers have a value that is greater than the median. Half of them have values that are less.

In some sets of numbers, there may be duplicates or triplicates. In this example, the number 55 appears twice. You can find the most common

Examples of a variety of averaging functions

Mixed positive and negative numbers don't always add up

	A	B
1	-£ 123,457.78000000000000000000	
2	£ 53,999.99000000000000000000	
3	£ 40,007.75000000000000000000	
4	£ 9,056.58000000000000000000	
5	£ 8,029.59000000000000000000	
6	£ 9,000.26000000000000000000	
7	£ 1,568.90000000000000000000	
8	£ 1,794.71000000000000000000	
9	-£ 0.00000000000059117156	
10		
11		

SCREEN 4

'Microsoft's announcement leaves open the possibility that there's now a free and sanctioned tool to decrypt Excel workbooks'

value in a set of numbers using the MODE function. Here, **=MODE(A1:A7)** gives the answer 55.

If all the values are positive, you can find the geometric mean of the range using **=GEOMEAN(A1:A7)**. With this example, the answer is 27.52.

The geomean is similar to the arithmetic mean, except that instead of adding the set of numbers and then dividing the sum by the count of numbers in the set, n, the numbers are multiplied and then the nth root of the resulting product is taken.

If you need the harmonic mean, use **=HARMEAN(A1:A7)**. This example evaluates to a harmonic mean of 16.94. The harmonic mean is the reciprocal of the arithmetic mean of reciprocals. It is always less than the geometric mean, which is always less than the arithmetic mean.

Sometimes in a series of numbers, the lowest and highest ones can be out of proportion to the series, and you would like to leave them out of the equation. You can use the TRIMMEAN function to trim them out. With this example: **=TRIMMEAN(A1:A7,0.1)** it excludes 10 per cent of the values from the top and bottom of the set, so the answer is 40.

A total mess

Many Excel users have found that if you total a column of figures that include multiplication or division formulas – calculating Vat, for instance – the results may not add up correctly. But several readers have pointed out lately that Excel's SUM function can

return minor errors, too – even with just simple additions.

If you enter a series of cash amounts in a column, starting with a negative amount, as in the example in screen 4, they should add up to zero. AutoCalculate in the Status Bar says the sum of the values is zero. But if you format the totalling cell to more than 10 decimal places, Excel starts to include some surplus values.

This may not matter in many cases, but can produce strange results in others. If the totalling cell is included elsewhere in an IF statement, for example, that function would return False when it should be returning True. Checking a financial statement to confirm if it balances two different ways can produce a confusing result.

Something to worry about

Microsoft has announced that it is providing free to law enforcement agencies a USB memory stick containing a suite of snooper scripts called COFEE, or Computer Online Forensic Evidence Extractor.

COFEE enables its users to run more than 150 examination commands on an active Windows computer system and save the results on the portable drive for later analysis. This preserves valuable information that could vanish if the computer had to be shut down and transported to a forensics laboratory. Files that are stored in active memory would otherwise be lost, for example.

Microsoft's carefully worded announcement leaves open the possibility that there's now a free, Microsoft-developed and sanctioned tool to decrypt Excel workbooks. Some agencies of the UK Government, such as HM Revenue and Customs, can legally turn up on the doorstep and examine PCs and laptops in situ. COFEE will be invaluable to them. One has to hope the Government is more careful with these USB drives than it has been with data-filled DVDs.

Doubtless, we'll soon hear in the news of COFEE being used on a covert basis by unauthorised persons to peek into a computer and gather data without the owner's knowledge. This could also further aid corporate spying on rival companies. **PCW**



Nigel Whitfield edited computer magazines before going freelance in 1995. A specialist in internet and consumer issues, he has a degree in Computing Science from Imperial College.

→ Comments welcome on the Web Development column. It returns in the November issue.
Email webdev@pcw.co.uk Please do not send unsolicited file attachments.

Database dalliances

Find out what you need to take when moving to proper hosting for your website

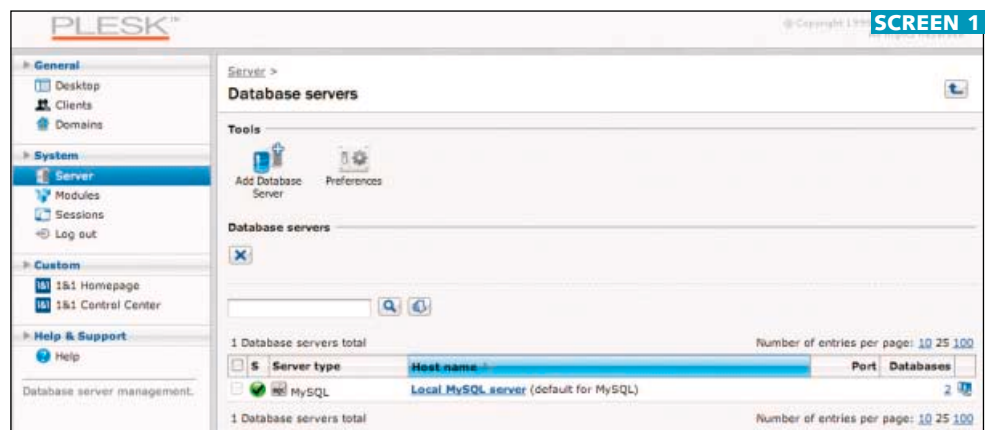
Last time round, I looked at what you'll need to get to grips with if you decide to treat yourself to a dedicated server (see pcw.co.uk/2218040). We saw how you create an account for yourself in the Plesk web-based admin system, then add a domain, which configures the web server to serve up pages. We got as far as setting up the site and a few of the options necessary to upload pages. This month, I'll explain what you need to do next if you're running a site that requires things like a database to be configured, plus some of the other tasks you may need to think about.

Uploading your site

At the end of the last instalment, we configured the hosting with an FTP user for uploading the files to the site. Depending on the configuration of your system, you may need to check exactly where your web files have to be uploaded. For example, with the Plesk system on the server we used, when you connect via FTP, you'll see a home directory containing several folders; the one into which your main web pages should be put is called `httpdocs`; there's also `httpsdocs`, which is for the files that would be served over a secure connection. If you've created subdomains of your site, those are in a different place.

Say you've added `'forum.yourdomain.com'`, from the home directory you'll need to go to `subdomains/forum/httpdocs` to upload web pages for that. Different web admin systems will arrange things in different ways; for example, on our older Cobalt Raq servers, you'd need to change to `/web` after logging in via FTP for the main site.

I'd also recommend checking to see if you can use SFTP rather than FTP – this uses secure connections, and if it does work, consider turning off or



blocking FTP on your server completely. It's a magnet for people trying to attack the system, thanks to flaws in some old FTP server software. Similarly, if there's an option for Telnet access to the server – which lets you type commands at the Linux prompt – it's preferable to use SSH, so turn that on. But please, if you don't need 'shell access' as this is called, you really should make sure that it's turned off for most users. It is handy, however, for an admin user to be able to connect to the server via SSH, as it can be a useful troubleshooting tool.

Database setup

For many sites, one of the reasons for using your own server rather than the free space that came with your internet access is to allow you to do more creative and interesting things with dynamic sites and scripts, and

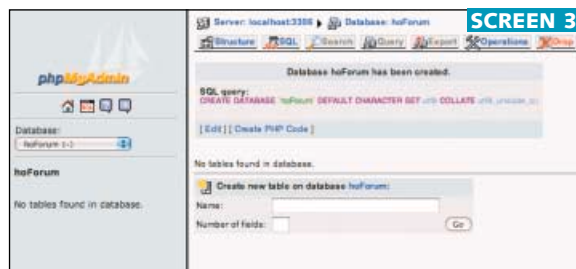
You can configure a database server via the Plesk admin system

that often means setting up a database server. Most content management systems (CMS) rely on a database, as do forums, blogs and plenty of other useful tools. Over the years in this column, we've looked in a fair bit of detail at how you can write the scripts you need, but before you can get that far, you need to configure the database server. If you've set up the website from scratch, it's unlikely it will have been done for you – though some friendly web hosts will have. So, let's walk through the steps you'll need to do to get a basic database ready for your web scripts.

As with last month, the admin system in the web pages will be Plesk, on a server from 1 and 1; this comes with the popular MySQL database and a set of web admin pages for it. On the Plesk main screen, click Server in the left-hand panel, and then choose Database Servers; if a server is already running on the system, you'll see something similar to screen 1.

If no database server is shown, click to add one and, on the next screen, specify the hostname as `'localhost'` – that's the shorthand for the same server – and make sure the type is set to MySQL. Give a name and password for an administrative user, and click OK.





If the database server is set up for you, it's most likely been configured with the same administrative username and password that you use to log in to Plesk.

So far, all you've effectively done is 'wake up' the database server; it's now running in the background, but before you can use it for anything, you need to create a database and assign access permissions. That's not done in the main web interface, but by using a tool called phpMyAdmin.

To access that, click the name of the database – in screen 1 that's the link text 'Local MySQL server' – and then on the next screen click Databases. At the top of that screen, you'll see an icon labelled 'DB WebAdmin'. Click that to launch phpMyAdmin (see screen 2).

Configuring a new database

In the left-hand panel, there's a dropdown menu to select databases – there will already be one called mysql, which is where the database server stores permissions, plus some entries for phpMyAdmin and, if the server's running Plesk, probably a database called psa as well; you may see some others for pre-installed web applications.

To create a new database, say for a web forum or a blogging system, type in the name of the database into the box below 'Create new database' in the main part of the window, and choose the 'collation', which is how the data will be sorted; for an explanation of the different options, click 'Character sets and collations'. Not sure which one to choose? Use either latin1-general or one of the general Unicode options.

Usually, you don't have to give a database a specific name, though some sets of scripts can be picky. Let's say we need a database for a forum for a Hands On discussion; we'll call it hoForum, so type that in the box, choose the collation and click the Create button. You'll see something like screen 3.

The database still isn't ready, however; for starters, there are no tables in it, so no data can be stored. That's not too much of a worry,

Creating a database is just a case of filling in a name and clicking Create

though. Most web applications that require a database also include a script of SQL commands that will set up all the tables and indices needed. But before they can do that, they need permission to access the database.

The buttons at the top of screen 3 look as if they might help, but that's a red herring here. What you need to do is to update the information in the MySQL database, which stores permissions for users to all the others. So, click the home icon in the left-hand panel, then click the 'Privileges' link, and scroll down to the bottom of the screen to find the link 'Add a new user' and click that to reach screen 4.

I suggest giving the user the same name as the database you want them to access, so in this case it's 'hoForum'; make sure the host is set to 'localhost' so only scripts on the server can access the database, and type a password twice.

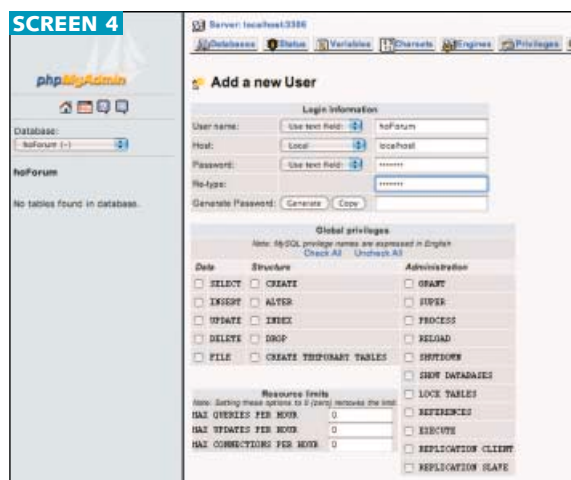
The admin page can generate a random password, if you prefer – just copy it into the boxes and make a note somewhere safe, so you can add it to your scripts. Click Go and you'll see a confirmation screen. Scroll down and there's a dropdown box next to 'Add

privileges on the following database' – so far, they can't change any databases, whatever the privileges you've given them. After picking the database, you'll be taken to a page like screen 5. Here is where you give the user permissions for the database you've just created.

Set the appropriate options and click Go. The user is now all set up to manipulate the database. If you're doing everything manually, you can create the tables you need for your own scripts – you can also specify per-table permissions if you need to. Another handy hint is to create a couple of users – give one read-only access, so that data can be queried and retrieved, and another the ability to update, delete or create information. Only use the second one in scripts that absolutely require it.

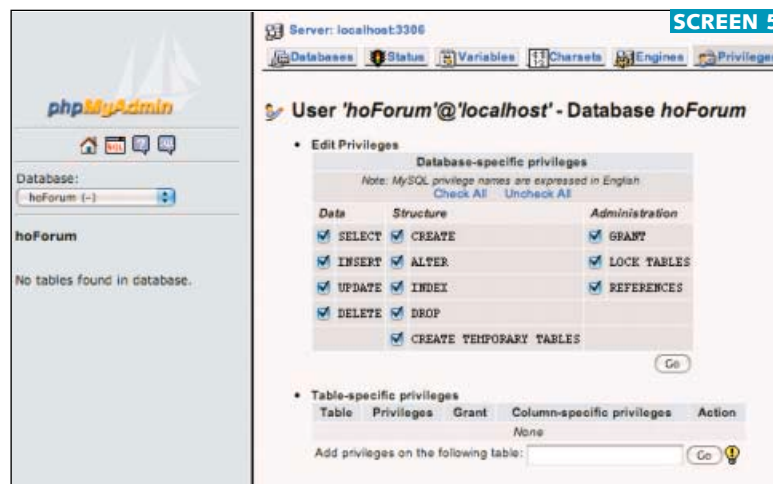
If you're setting up scripts you download from the web, check the documentation to see what happens next. For example, if you're setting up a forum using the phpBB system (www.phpbb.com) or the Movable Type blogging system (www.movabletype.org), once the database has been primed like this, you simply point your web browser to the folder on the server where you unpacked the installation files, and the setup script will ask you to enter the name of the database you just created, along with the username and password, which should be the ones you just set up, rather than the overall admin details.

The scripts then create all the necessary database tables themselves. Some software may instead ask you to enter the details in a configuration file that you run from the server's command line. Once that is done, your new server should be pretty much up and running. **PCW**



Add a new user; you don't need to specify any privileges at this stage

When the user is created, you can specify privileges on a per-database basis





Alan Stevens has implemented and supported networks for over 25 years, working for IT vendors, system integrators and customers. He now mostly researches and writes about networking matters.

→ Comments welcome on the Networks column.

Email networks@pcw.co.uk

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Hardy Heron hassle

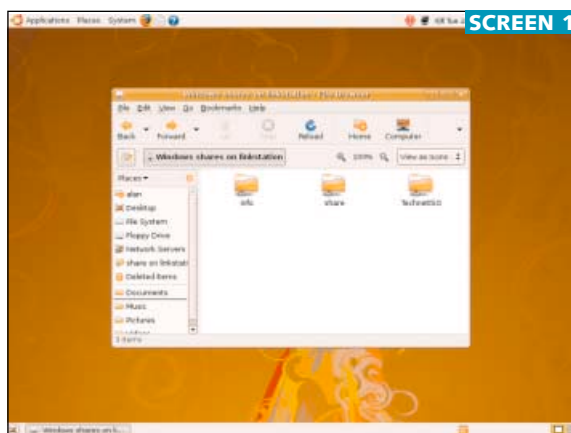
A significant bug that could affect many users impairs the latest Ubuntu release

I use both Windows and Linux and have been a long-time fan of Ubuntu, which for those unfamiliar with it is one of the most popular distros around. And justifiably so, as it delivers a lot of functionality in a format that's easy to get to grips with, making it a good choice for those just starting out in the open-source world, as well as for more experienced users. You can also get commercial training and support from Ubuntu's official sponsor Canonical, as well as a wealth of community help and advice from the many users of the software, developers and Linux enthusiasts.

Unfortunately, the latest implementation, released at the end of April and referred to as Hardy Heron (Hardy for short), appears to have been launched with a significant bug – one that's likely to affect a lot of users. This month, I'm going to explore how the problems manifest themselves or, at least, how I encountered them. More specifically, I want to discuss the problems I encountered when trying to browse and connect to certain Windows and other SMB shares using the latest Ubuntu 8.04 LTS release.

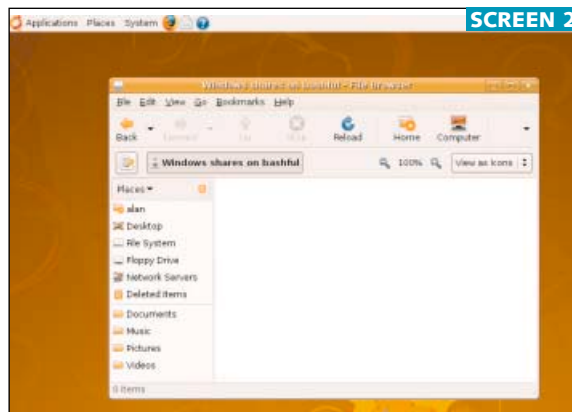
Kiss me, Hardy

The initial install was more or less trouble-free. Both server and desktop implementations of Hardy are available. However, I downloaded the latter version from Ubuntu's website (www.ubuntu.com) and used the .iso image provided to create an install CD. This I then popped into a PC, enabling me to boot into the so-called 'Live CD' environment, from where it's possible to evaluate the product without having to install anything. Happy that it seemed to work with the hardware I had, which is always a concern with older PCs, I was then able to load it onto the hard disk.



Above: From a Nautilus browser in Ubuntu 8.04, I was able to browse and connect to shares on a Nas appliance without any problems

Right: There was no list of file shares on my Windows XP Pro PC in the Nautilus file browser



Apart from new desktop graphics, there are no major interface changes in the 8.04 software, so it didn't take long to get familiar with what it had to offer and start doing some real work.

One of the first jobs was to connect to the Nas (network-attached storage) server, where I keep all my documents. Again, this was pretty easy, as the latest version of Ubuntu features v2.22 of the Gnome desktop, which includes a new Gnome Virtual File System (GVFS) and that, among other things, contains back-end code to handle SMB file shares.

GVFS is also used by the Nautilus file browser, so there's no need to install any extra software, such as

Samba, to browse or connect to SMB shares. All I had to do to access the documents on my Nas box was go to the Places desktop menu and navigate down from the Network entry.

This menu option opened a Nautilus window containing an icon labelled 'Windows network', from which I could get to my Windows workgroup and see all the attached PCs and servers. I then clicked on the icon for the Nas appliance (called Linkstation), where I was presented with a list of shares (see screen 1) from which I was then able to retrieve the documents I wanted.

I encountered no problems connecting to the shares on the Nas box and was able to open documents using Openoffice.org by selecting them from the Nautilus file browser. So far, so good, but when I tried to browse to shares

on a Windows XP PC, things didn't go quite so smoothly.

It all seemed OK at the beginning, with Nautilus displaying an icon for the PC along with others, just as expected. However, double-clicking resulted in an empty window, not a list of available shares as expected (see screen 2). There was no prompt asking for a username and password to authenticate to the PC before browsing its share, which is what would normally happen.

Naturally, I then tried to browse to a few other Windows PCs (XP and Vista) and both Windows and Linux servers, some of which worked while others didn't. I also downloaded and

then installed the latest Ubuntu updates to see if the issue had been resolved since I obtained the software, but it hadn't. I even installed Ubuntu onto another PC and in a virtual machine just to see if it was PC-specific. It wasn't – I had the same problem on every PC I tried, both real or virtual.

A problem shared

Further investigation revealed that others had encountered similar problems with the Hardy Heron release of Ubuntu. Indeed, there were numerous postings on the Ubuntu support forum, many reporting the symptoms I had encountered with Windows workgroup networks, together with others who were having problems browsing shares via Active Directory and on open-source Samba file servers. And it wasn't just browsing that was affected. Other users reported error messages when trying to directly mount shares from the Nautilus application.

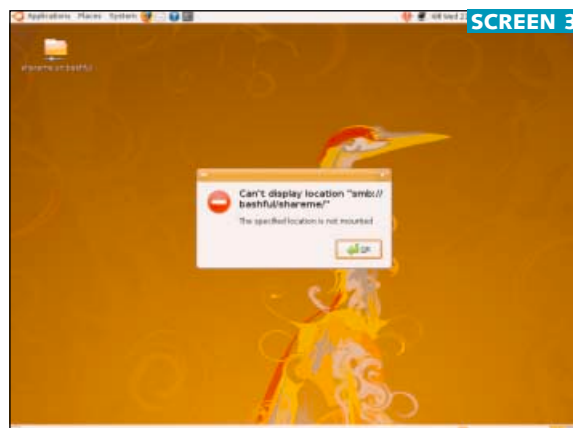
The previous (7.10) version of Ubuntu worked fine and the general consensus was that the culprit was the updated Nautilus software, in combination with the SMB back end for GVFS. More specifically, it appeared to be an issue when those components were used to access SMB shares for which user authentication was required.

This all made sense, as my Nas server allows anonymous browsing and wasn't affected. When I later reconfigured the Windows XP Pro PC to use simple file sharing – where remote users are authenticated using the local Guest credentials – I could browse and connect to its shares without difficulty.

I was also able to mount the offending shares using the Samba smbmount tool and, ultimately, mount the shares in Nautilus by using the Connect to Server option and supplying a username and password up front. However, even that proved a bit 'buggy', with first an error message (see screen 3), then two mounts to the same share created instead of just one.

Not so Hardy

Of course, by the time you read this, there will almost certainly be a fix for this particular issue, possibly along with others, in an expected 8.04.1 release of the Ubuntu software. Still, a bug of this nature is pretty serious, is



likely to affect many users and really should have been dealt with during alpha/beta testing. I found postings on the Ubuntu forum describing it as a 'deal breaker' from people thinking of upgrading to the 8.04 product. It was still being worked on a month after the 8.04 launch, and you really had to dig deep into support forums to even find out that it had been officially logged as a bug.

I can't help but wonder what might have been the reaction if a similar bug had been found in a newly released version of Windows. The outcry would, inevitably, have been a lot more voluble. But does that mean a fix would have been issued any more quickly? I'll leave you to ponder that question. I'm a bit concerned that I might be inundated with emails from outraged users claiming that I'm knocking Linux. Let me assure you that I'm not.

All I want to do is share a recent Ubuntu Linux experience and try to draw a few conclusions from what happened. So, let's just make it clear again: I'm not looking to grind any kind of axe here and await your emails with interest – not to mention trepidation.

Firewall issues

On a slightly different but related note, I want to emphasise the importance of checking firewall settings when troubleshooting networking problems. This is, again, related to problems that I've encountered recently with Linux and network file sharing, but is equally relevant to Windows and other platforms.

Although an error message was displayed, by using the Nautilus Connect to Server option, I was able, eventually, to mount and access my SMB shares

When troubleshooting file-sharing problems, it's a good idea to check desktop firewall settings and, often, turn such firewalls off altogether

The trouble with most desktop firewalls is that to do their job effectively, they need to block a whole lot of traffic you'd really like to get through. When first installed, they tend to take a 'none shall pass' approach and are configured to block protocols such as SMB and/or the various TCP/UDP ports that are used to share files.

This shouldn't be too much of a problem. On a Windows XP or Vista PC, for example, turning file sharing on should automatically cause a suitable firewall exception to be created. However, depending on how you enable networking, this isn't always the case and, by default, these automatically generated exceptions will only apply to the local subnet.

It's worth checking your firewall settings (see screen 4) and, possibly, adding an exception yourself if it hasn't already been done for you, or modifying its scope if you have more than one subnet on your Lan. Similarly, if you use a third-party firewall, you may have to program one or more rules manually to allow file-sharing traffic through.

I've also noticed the same happening on some recent Linux distros. For example, with Mandriva, I've had to explicitly allow file and print sharing in the desktop firewall, or turn the firewall off altogether to make file-sharing applications, such as Samba, visible on the Lan.

Desktop firewalls really can be a pain when it comes to file sharing and, if you have firewall protection for the network as a whole, then turning them off for a while isn't a huge risk. I now routinely turn off any firewalls that are running on

affected PCs and servers when troubleshooting file-sharing problems.

I also check to make sure that there's only one firewall running, having encountered PCs previously where a third-party product has been installed alongside the Windows firewall.

I urge anyone else to also do the same and to check out the firewall before spending time needlessly chasing other possible causes of any networking problems. **PCW**





Mark Whitehorn is one of those lost souls who actually likes databases. He splits his time between consultancy, writing, working for two universities and tinkering with old cars.

→ Comments welcome on the Databases column.

Email database@pcw.co.uk

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Different types of nothing

A debate about tables and multiple flavours of null

In the December Databases column (see www.pcw.co.uk/2201983), I said nulls are used to represent missing data. As I wrote then, null means, in essence, 'We do not know what this value is'. That is perfectly true, but, as becomes apparent in this month's column, there's more than one flavour of not knowing. So, let's take a look at why we can have multiple flavours of missing information.

You grow some plants and measure their height and fertility. At the end of the season, they all die (they are annuals) and are composted. Three years later, you discover that you forgot to record the data for a particular plant (I write from bitter experience here). In this case, you don't have the data and you also actively know that you never will.

In addition, there are other plants you did measure, but you've lost the bit of paper on which the results were recorded. In this case, you know that the data did exist and is currently unavailable, but who knows – you might find it again. In this case, the very state of the existence of the data itself is unknown.

Now you are recording information about products that your company sells (power tools and paint). You are filling in a record for a new product – white emulsion. The database has a field for voltage. All the power tools have a voltage, of course, but to your sure and certain knowledge, paint doesn't. In this case, you don't know what the data is and you also know

Table2 : Table **SCREEN 2**

PersonID	QuestionID	Response
P1	Q01	a
P1	Q02	d
P1	Q03	a
P1	Q04	c
P1	Q05	a
P1	Q06	d
P1	Q07 - Q13	...
P1	Q14	a
P1	Q15	a
P1	Q16	c
P1	Q17	d
P1	Q18	b
P1	Q19 - Q38	...
P1	Q39	c
P1	Q40	a
P1	Q41	d
P1	Q42 - Q48	...
P1	Q49	d
P1	Q50	a

Record: 6 of 44

Table 2 stores, in each row, one person's answer to one question – it's a design that gives far more rows, but far fewer columns

why – it's just that the request for the data is inappropriate.

Now suppose that you are working in a hospital and recording patient data. While filling in a new record for Vivian Smith, you find that Gender is not recorded. But Vivian definitely has a gender and is currently in a bed just down the corridor, so this data is only unknown at present. In this case, you don't have the data, but you have every reason to believe that it will be possible to enter it later.

Finally, you work in a police station. A person has been arrested, but refuses to divulge their date of birth. You don't know what the data

is, but you know with full certainty it does exist (the person was clearly born at some stage). In this case, the data is known to someone, but it is being actively withheld from the database.

I'm sure you can think of other different kinds of missing information. Should we represent all these different classes of missing data in the same way, as nulls? The answer is that it depends on what you want to do with the information.

Let's go back to the plant example. You know that there are two possible reasons some of the data is missing (you will never have it, or it is currently lost). Imagine that, in this case, the bottom line is that you don't care why it's missing, you just want to differentiate between data that you currently have and that which you don't. If so, you could use a null in both cases. However, if you do care about the difference, then it is important to be able to distinguish between the two cases and a null won't allow you to do this. Therefore, you might use a null for one kind of missing information and, say, the letters 'NCA' (not currently available) for the other.

You can probably see where this is leading. I can't give you a definitive answer (which means my answer is probably some kind of null, but let's not go there), because the way in which you should handle missing data depends entirely on the meaning that it has in your application. This makes it vital that we, as database designers,

Table1 : Table **SCREEN 1**

PersonID	Q01	Q02	Q03	Q04	Q05	Q06	Q07 - Q13	Q14	Q15	Q16	Q17	Q18	Q19 - Q38	Q39	Q40	Q41	Q42 - Q48	Q49	Q50
P1	a	d	a	c	a	d	..	a	a	c	d	b	...	c	a	d	...	d	a
P2	a	c	c	c	d	b	...	d	d	d	d	b	...	b	a	d	...	c	c
P3	b	c	d	d	c	c	...	c	a	c	b	c	...	a	b	d	...	d	d
P4	c	d	a	a	d	a	...	d	c	d	c	b	...	d	d	d	...	d	c
P5	a	a	c	b	a	a	...	a	d	a	b	b	...	d	c	c	...	c	c

Record: 8 of 8

PersonID	Q01	Q02	Q03	Q04	Q05	Q06	Q07 - Q13	Q14	Q15	Q16	Q17	Q18	Q19 - Q38	Q39	Q40	Q41	Q42 - Q48	Q49	Q50
P1	a	d	a	c	a	d	...	a	a	c	d	b	...	c	a	d	...	d	a
P2	a	c	c	c	d	b	...	d	d	d	d	b	...	b	a	d	...	c	c
P3	b	c	d	d	c	c	...	c	a	c	b	c	...	a	b	d	...	d	d
P4	c	d	a	a	d	a	...	d	c	d	c	b	...	d	d	d	...	d	c
P5	a	a	c	b	a	a	...	a	d	a	b	b	...	d	c	c	...	c	c
P6	a	b	b	b	c	d	...	a	b				...				...		
P7	c	d	c	b	a	b	...	a	c				...				...		
P8	d	c	a	b	d	c	...	a	c	d	b	b	...	c	d		...		
*																			

Record: 8 of 8

don't make arbitrary decisions about missing information, but consult users and find out more about the data itself; as I had to do in the case below.

Designing tables

I was recently asked to arbitrate in a situation where a database design team had come up with two table structures and wanted assistance in deciding which was most appropriate. (OK, let's be honest, a blazing row had broken out and arbitration was required.) The database was destined to store the results of multiple choice questions, and the first design, Table1, had 50 answer fields and looked like screen 1.

Here the scores for each person are recorded in one row, with the PersonID as the primary key. The second design, Table2, is shown in screen 2.

Each person/question interaction is stored in one row, and the person and question IDs form a joint primary key. If a person answers 50 questions, then there will be 50 rows in this table (the tables shown here and in DBCAug08.mdb contain a small subset of sample data). You'll find this database on the cover disc and at www.pcw.co.uk/2151344.

So, I was asked, which is best? Well, by this point, I don't think anyone has enough data to answer that question. Both tables would hold data in third normal form, so that particular means of differentiating between designs isn't available. (Third normal form is a level of normalisation that helps us ensure robust table design.) So, how do we decide? Well, the vital next step is to focus on the data that will be collected. Further questioning revealed that not every person was asked every question; some were asked all 50, others the first 40 and some only the first 15. If we picture data like this held in Table1, it is immediately clear that many nulls will have to be stored (see screen 3).

Actually, as a side issue, null means, 'We don't know what data to

enter here'. Since we do know the answer for these cells (we know that the question was never asked), we would probably store not a null, but some identifier to indicate that, 'We know this data will never be forthcoming', such as DNR for 'data not requested'. However, the point is that we will have a potentially large number of cells holding non-essential information. (The information is 'non-essential' because were it not stored, we could assume that the question was not asked.)

Table 2 stores a row each time a person answers a question, so no record is kept where a person was not asked a question. No nulls (or DNRs) would be stored in this structure (see screen 4).

The crucial difference between the designs is now apparent. Table 1 is essentially a two-dimensional array with an intersection for every possible combination of person and question. If every person answers each and every question, then Table1 is an appropriate structure. (We can still argue about whether it's the best or the perfect structure, but it is certainly suitable for the task). However, if a large number of potential questions are never, in

Table 1 ends up with a huge number of null values if not everyone is asked every question

Table 2 never has to contain any nulls

PersonID	QuestionID	Response
P7	Q01	c
P7	Q02	d
P7	Q03	c
P7	Q04	b
P7	Q05	a
P7	Q06	b
P7	Q07	d
P7	Q08	c
P7	Q09	d
P7	Q10	c
P7	Q11	c
P7	Q12	d
P7	Q13	a
P7	Q14	a
P7	Q15	c

Record: 45 of 45

practice, asked, then it is not an appropriate structure, because it has a pre-arranged storage space for data that we know will never exist.

Table 2, on the other hand, stores only those events that occur. We can argue that this makes it an appropriate structure for both eventualities. However, since nulls are never stored in this structure, it doesn't matter whether they occur or not in the pattern of questions asked.

Next question – what happens if some people fail to answer every question they are asked? Well, in either case, we can represent that with a value such as NRS for 'no reply supplied'. But how does it affect our choice of structure?

If people occasionally fail to answer a question, then Table 1 would still be a suitable structure. As the number of questions that aren't answered increases, the structure becomes less and less fitting.

As you can see, it is the pattern of data that finally informs our choice of structure. If a data set is sparse (that is, it contains a proportion of nulls), then that is an important pointer towards the Table 2-type solution.

You might wonder if Table 2 works well for both sparse and fully filled data sets, then why do developers bother with an alternative option? The answer is that it would be much easier to base a form on the Table 1 structure than on the Table 2 version.

The choice of Table 2 is, as with many decisions, a relatively complex trade-off: here it sits between the most effective way of storing information of a particular pattern and the ease with which a user interface can be properly developed.

End note

Mark Whitehorn has been writing the Databases column for exactly 15 years this month. Selected highlights are available in book form: visit www.penguinsoft.co.uk for details. **PCW**



Tim Anderson is an IT journalist and software developer, and began writing for PCW in 1993. Since his first Commodore Pet, he has acquired expertise in Rad programming, Windows and the internet.

→ Comments welcome on the Visual programming column.

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Data Basic

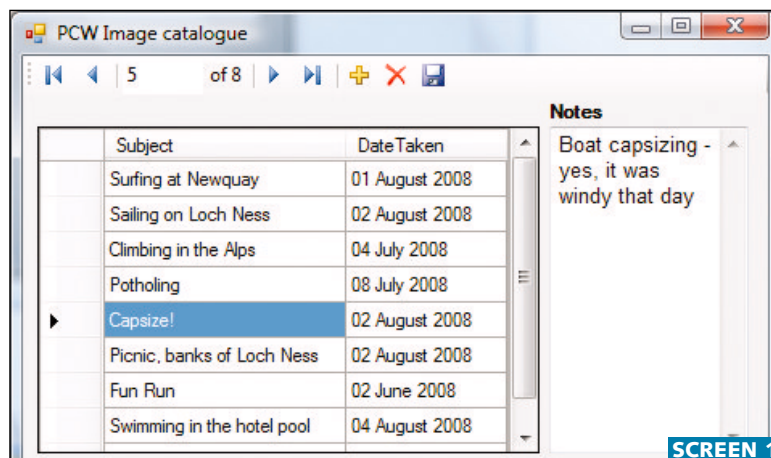
Investigate the different ways of handling databases in Visual Basic

Microsoft has come up with a seemingly endless stream of database libraries over the years and, although some are of high quality, particularly the recent work on Linq (Language Integrated Query), they can leave developers bemused over how to write simple database applications, a subject about which I receive frequent queries. However it's dressed up, the core of a database application is Crud: Create data, Retrieve data, Update data and Delete data. How do you do Crud in Visual Basic today? Using the example of a catalogue of images (see screen 1), this month's column shows a couple of approaches, using the free Visual Basic 2008 Express.

Choosing a format

It all starts with a database. Unfortunately, most database engine choices involve some compromise. One of the problems is that Microsoft Access, part of Office, is increasingly out of sync with the rest of the company's database technology. Access is based on native code and Com, whereas most Microsoft development tools, including the ASP.Net web platform, are based on the .Net Framework. Access is marooned with its own database engine, called Jet, its own form designer and the old Visual Basic for Applications programming language. The consequence is that if you begin a database application in Access, it's hard to migrate it anywhere else except by exporting the data and starting again. Although Access has a great user interface for reporting and working interactively with data, it's best avoided for custom databases.

If you follow Microsoft, there are two database engines worth looking at. The best fit for a single-user, standalone database application is SQL



A simple database application in Visual Basic

Server Compact Edition (SSCE). The engine is a set of DLLs that runs in the same process as your application, and a database is just a file. Beyond that, there's the full SQL Server, which is the best supported database engine on Microsoft's platform and includes single-user desktop applications right up to Enterprise deployments. SQL Server Express is free, as is SSCE.

Unfortunately, both are compromised. SSCE is hard to access from other applications, since there's no ODBC driver, only OLE DB, and .Net. SQL Server Express is great for features and allows use of Microsoft's trendy Linq to SQL extensions, but it is more complex to deploy and manage, since it is a server database that happens to run on a desktop. It also consumes more resources than SSCE. The example that follows uses SSCE, which is installed with Visual Basic 2008 Express.

Connecting to data

The application starts with a new Windows Forms project in Visual Basic 2008 Express. Choose Add New Item from the Project menu and select Local Database. I called it pcwdata.sdf (see screen 2). In the next dialogue, choose Your Database Objects and click Finish.

From the View menu, choose Database Explorer. Expand pcwdata.sdf, right-click Tables and choose Create Table. In the New Table dialogue, name the table PCWImages and add:
ID int, Identity, No nulls, Unique, Primary Key
Subject nvarchar, length 100, No nulls
Date datetime, nulls allowed
Notes ntext, no nulls

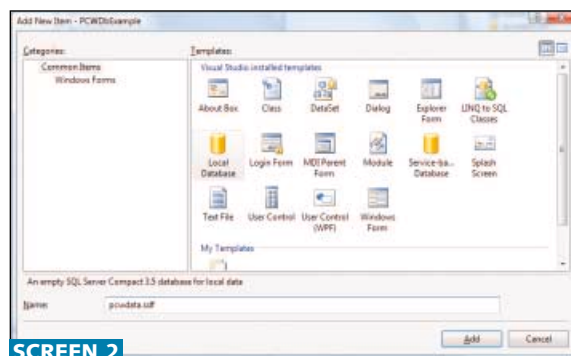
(Key: ↵ code string continues)

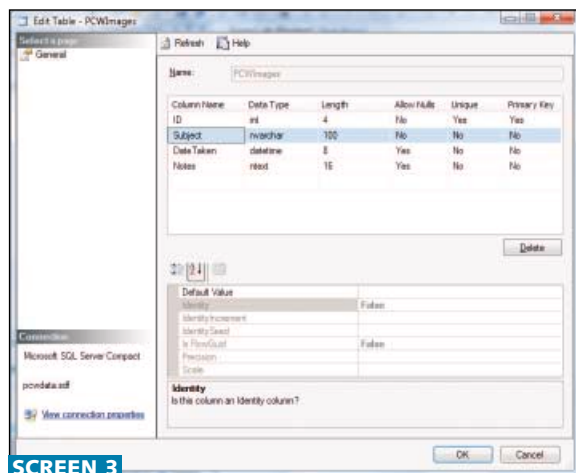
Null means 'value unknown'. It is pointless for a Notes field, but could be useful for a date (see screen 3).

Add a local database to your VB project

Show me the SQL

One way to do Crud is with straight SQL, which has INSERT, SELECT,





SCREEN 3

UPDATE and DELETE statements. This is a code-centric approach. By way of preparation, add the following line to the code behind your form:

Imports System.Data.SqlServerCe

Next, figure out the connection string, which includes the database's path and filename. You can copy this from the properties of the connection in the Data Explorer, making sure you save the project first. Add the following as the first line in the form class:

```
Private connectionString =
"Data Source=[YOUR
PATH]\pcwdata.sdf"
```

Here is how to insert a new record using SQL. Place a button on the application's main form, double-click and write the following code for the event handler:

```
Using conn = New
SqlCeConnection(Me.
connectionString)
Using cmd = New SqlCeCommand
cmd.Connection = conn
cmd.CommandText = "INSERT
INTOPCWImages(Subject,
DateTaken,Notes) VALUES
(@subject,@DateTaken,@Notes)"
With cmd.Parameters
.AddWithValue("Subject",
"Surfing at Newquay")
.AddWithValue("DateTaken",
New Date(2008, 8, 1))
.AddWithValue("Notes",
"That's me")
End With
conn.Open()
cmd.ExecuteNonQuery()
End Using
End Using
```

Run the code and click the button. Close it, right-click PCWImages in the Database Explorer and choose Show Table Data. All being well, it will have a row of data matching your insert.

In a real application, you would typically take the values for the new

Add fields to a database with the table designer

record from controls on a form. You'd likely not include this code in the form itself, but in a separate data management class. Note the use of parameters rather than literal values in the SQL: this is a good protection against SQL injection attacks if the code ends up in ASP.Net, as well as being tidier.

How about retrieving data? You can do this with the SELECT command. Add a listbox to the form, add a second button and write this code:

```
Me.ListBox1.Items.Clear()
```

```
Using conn = New
SqlConnection(Me.
ConnectionString)
Using cmd = New SqlCeCommand
cmd.Connection = conn
cmd.CommandText = "SELECT
Subject FROM PCWImages ORDER
BY Subject"
conn.Open()
Using dr = cmd.ExecuteReader
While dr.Read
ListBox1.Items.Add(dr.
GetString(0))
End While
End Using
End Using
```

By now, you'll get the idea.

UPDATE is similar to INSERT:

```
"UPDATE PCWImages SET Subject
= @Subject WHERE ID=@ID"
```

DELETE is the simplest SQL of all:

```
"DELETE FROM PCWImages WHERE
ID=@ID"
```

The SQL approach has advantages. It offers good performance, with the minimum of clutter between your code and the database, and standard SQL will work with most database engines. Best of all, you can see what instructions are being sent to the database, which assists debugging.

If you need maximum flexibility, and want to work with the data more in code and less through standard visual controls, the SQL approach is great. The downside is that you have

to write a lot of code. It doesn't look too bad in the bare-bones example above, but when there are multiple tables with dozens of fields, it soon gets tedious. The code above also skates over the issue of hanging on to the ID for each row you retrieve. It's not too difficult, but it is more work.

The alternative is to use the Rad data tools in Visual Basic. Scrub all that SQL or start a new project and try that.

Crud the quick way

What follows presumes you have the same database as above. When it was added to the project, Visual Basic also created a dataset, called by default pcwdataDataSet.xsd. Double-click this in the Solution Explorer to open the DataSet Designer.

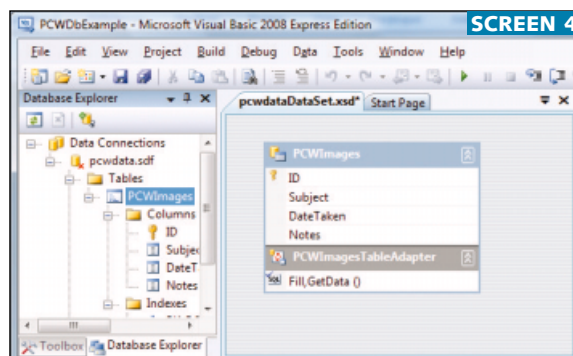
This is really an XML schema, but the designer hides it from you. Open the Database Explorer and drag the PCWImages table onto the designer. Save it, then open the form designer and drag the PCWImages table from the Data Sources tab onto the form (see screen 4). VB does some magic, adding a DataGridView and a navigator to the form. Reposition the items, then run the project. This really is an instant database application. You can add rows by clicking in a blank row and typing, amend them by typing in the grid or delete by clicking on 'X'. Remember that changes you make are not saved unless you click Save before closing.

There is a fair amount of learning to do to get the best from components like the TableAdapterManager. The generated application is a good start, but could be a disaster in some circumstances. Here's how to improve the application a little. There's no need to display the ID field, and the notes would look better in a separate control. Right-click the DataGridView, choose Edit Columns and remove ID and Notes. Next, add a TextBox to the form and arrange the components so that it sits to the right of the grid, with a vertical scrollbar. Currently, the Notes box is not linked to the data. To fix this, edit its properties and expand DataBindings. Select the Text property and bind it to the Notes field in PCWImagesBindingSource. See next month's issue for more VB database tips.

Resources

Download the code for this sample from www.itwritings.com/pcw Visual Basic Express is available from www.microsoft.com/express/vb PCW

The DataSet Designer



SCREEN 4

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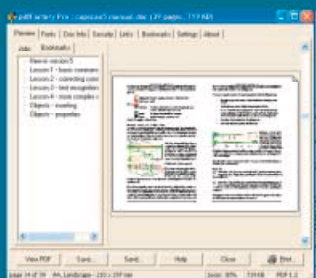


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- eMachine E4220 Intel D925 Dual Core 3.0GHz CPU
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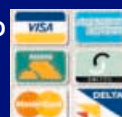
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Franking is cheaper than stamps...



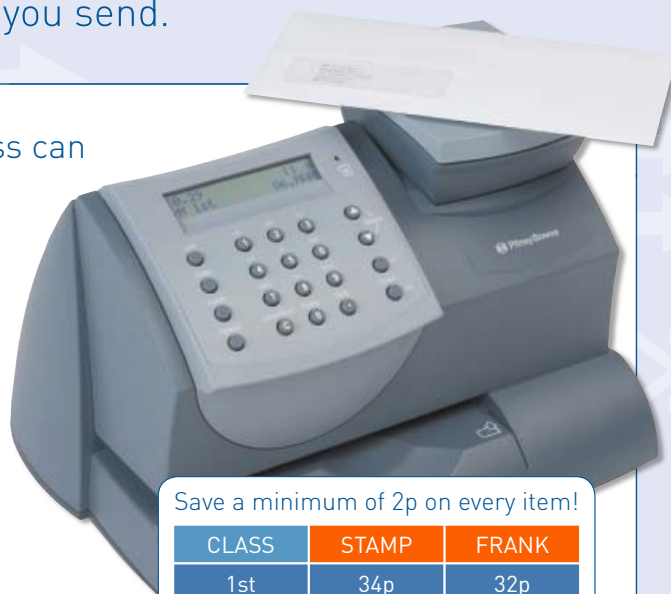
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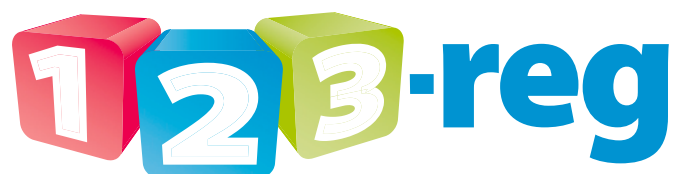
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ON THE CD

PC Tools Internet Security 2008 • Tune Up Utilities 2007 • System Mechanic 8 • 350 Pages
Acoustica 3.3



ON THE 8GB DVD

PC Tools Internet Security 2008 • TuneUp Utilities 2007 • System Mechanic 8 • 350 Pages
Acoustica 3.3 • Serif WebPlus 8 • Damn Small Linux • Zenwalk Linux 5.2



Let our workshops on the following pages show you how to use some of the software on the CD and DVD

COVER DISC

HELP LINES

WEB:
www.pcw.co.uk/disc-support

EMAIL:
help@pcwsupport.co.uk

PHONE: 01702 668 198
(9.30am to 5pm Mon, Tues,
Thurs & Fri; open until 8pm
on Wed & 10am to 2pm Sat)

Note that we cannot give support for programs on the disc

SOFTWARE LISTING

ON THE CD

5 FULL VERSIONS

PC Tools Internet Security 2008
Tune Up Utilities 2007
System Mechanic 8
350 Pages
Acoustica 3.3

9 TRIAL VERSIONS

Acoustica 4.1
Ashampoo Winoptimizer 5.04
Iolo Antivirus
Drivescrubber
Personal Firewall & Search and Recover
Jaws PDF Editor 4
Pookanyoni 1.0.11
Tune Up Utilities 2008

4 FROM THE MAGAZINE

FreeLce 1.7
Mozilla Lightning
Road Runner
Virtualbox 1.6.2

42 FREWARE

A-squared Free 3.5.0.15

Adobe Flash Player 10
Avast Home 4.8.1195
Belarc Advisor 7.2.24.4
Clipdiary 1.4
Core FTP Lite 2.1.1568
Crossloop 2.2
Daphne 1.35
DexposeE2
Digsby build 30
Diskaid 1.1
Ebay Desktop 1.04
Fast Dial 1.90
Firefox Throttle
Free Wipe Wizard Fresh UI 8.07
Hotspot Shield 1.04
Jalbum 8
Microsoft Virtual PC 2007 SP1
Mozbackup 1.4.8
Notepad++ 4.9.2
Openedfiles View 1.16
Outlook Duplicate Remover

18 SHAREWARE

Burnaware Home 2
Catvids 7.23.02
Daymate 6.27
Hidownload 7.18

HTML Pad 2008 Pro 9.0.0.95
Idimagier 4.1
Isobuster 2.4.0.1
Magic ISO 5.5
Magictweak 4.12
Popmessenger 1.62
Rapid CSS Editor 2008 9.0.096
Rapid PHP Editor 9.0.0.96
Robotask 3.1
Sugarsync Manager 1.1.1

ON THE 8GB DVD EVERYTHING ON THE CD PLUS...

1 FULL VERSION

Serif Webplus 8

3 TRIAL VERSIONS

Corel Wordperfect X4
Dreamweaver CS4
Previewfireworks CS4
Preview

2 FROM THE MAGAZINE

Centrafuse 2.0 RC3
VMWare Fusion 1.1.3

2 LINUX & OPEN SOURCE

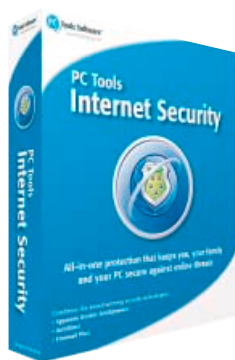
Damn Small Linux 4.4
Zenwalk Linux 5.2

120 RESOURCES

Audio, video & photo
Backup & restoration
Browsers, managers & extensions
Burning & media
Business & office
Developer & web development tools
General utilities
Internet & networking tools
Optimisation & diagnostics
Portable applications
Security

7 GAME DEMOS

Devil May Cry 4
Dracula Origin
Krakout
Race Driver GRID
Ebay Motors Demo
Sins of a Solar Empire
UEFA Euro 2008



INFORMATION

System requirements Windows 2000/XP/Vista, 110MB disk space

Contact www.pctools.com

Registration Get your free registration code from www.pctools.com/internet-security/free/promo/VNU0608

Need to know The program will protect your PC for 12 months before you need to buy a new licence

PC Tools Internet Security 2008

Keep your PC safe from spam, viruses and spyware for 12 months

Every time your PC goes online, it faces a barrage of attacks from spyware, viruses, worms, hackers and more. But once installed, PC Tools Internet Security 2008 immediately starts protecting your system from a range of web-based threats.

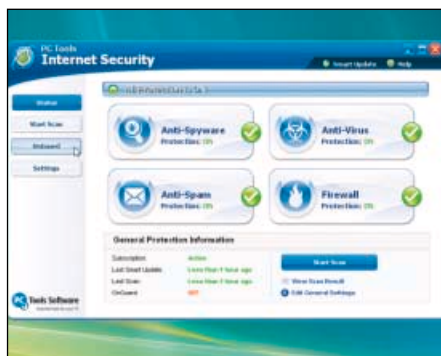
At the heart of the program is an anti-virus and anti-spyware engine designed to ensure you're not kept waiting for results. The default Intelli-scan mode checks running applications, startup files and other common places for infections, so can return a verdict on even the most packed hard disks in less than five minutes.

The suite includes an anti-spam module that uses a variety of techniques to help keep your inbox junk-free. The most powerful is a customisable Bayesian filter, but you can also

incorporate real-time blacklists to block emails from the latest spam sources, or even choose to block all emails from particular countries, which might be handy if you're receiving a lot of hard-to-block Russian language spam emails.

You also get a firewall that monitors both incoming and outgoing network connections, and a sophisticated rule-based engine that allows the software to cope with just about any network configuration. The suite also includes a system called Onguard that provides real-time protection for all the key areas of your PC: startup programs, network and browser settings, ActiveX controls and more. This isn't always enabled by default, but it's very easy to get Onguard working, and you can read more on how to do this below.

Use Onguard to protect your PC from the very latest malware



1 A PC Tools Internet Security 2008 scan detects most threats by matching software on your system to a known signature in its threat database. But if the malware is new, it may not have been detected yet, and that's why the program also provides a real-time detection system. Select Onguard > Click to activate Onguard.

2 Onguard consists of 10 modules, each with their own individual settings, so it's well worth browsing them to see what's on offer. You can increase the sensitivity of the Keylogger Guard to trap anything that's monitoring your keystrokes, for instance. You'll be more secure, but there is an increased chance of false alarms.

3 Some guards won't work for everyone. You might be using another tool to monitor your emails for malware, say, or maybe the network guard conflicts with another application. Clicking Manage Exclusions lets you build a new rule to bypass these problems and as a last resort you can always disable one guard while keeping the others.

READER OFFER

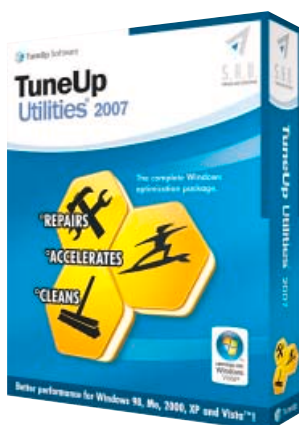
NEW FEATURES

Clean and optimise the Registry
Recover deleted files
All-in-one system optimisation
Guarantee your PC privacy
Standalone spyware detection
Keep your inbox spam-free

SAVE 20% ACROSS THE PC TOOLS RANGE

This version of PC Tools Internet Security 2008 will keep your PC malware-free for a year before the licence expires. If you find the program useful, you can purchase another 12 months of updates for around £25, and that licence can be used to cover up to three PCs. Enter your licence code at www.pctools.com/internet-security/renew to order.

Just registering PC Tools Internet Security 2008 also qualifies you for a 20 per cent discount on anything else in the PC Tools range, including a Registry cleaner, system optimiser, file undelete tool and more. Visit www.pctools.com/internet-security/free/promo/VNU0608 for more details.



INFORMATION

System requirements Windows 98/ME/2000/XP/Vista, 50MB disk space

Contact www.tuneup-software.co.uk

Registration Use your name and enter serial code TNGAR-GFAHB-GSEQE-JUPLG-RSSUB-EQAHY when registering the program

Tune Up Utilities 2007

Clean, tune, tweak and optimise your PC with this versatile suite

Configuring Windows to behave the way you'd like isn't always easy. Just finding the setting you need can be frustrating. Is it in the Control Panel? In a right-click context menu? Buried deep in the Windows Registry?

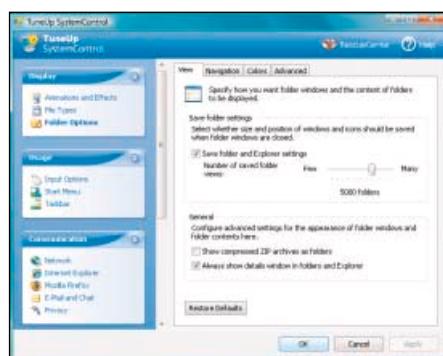
Tune Up Utilities 2007 takes care of all these concerns by bringing all the best Windows tweaks together in one program. And there are plenty of powerful features on offer, including the Tune Up Styler 2, which offers many ways to customise the way Windows looks.

A Repair function rebuilds the appropriate cache if your icons aren't displaying properly. And you can install new boot or logon screens, visual styles or icon sets. If you don't have any suitable image, it's even possible to download free images or icons from the Tune Up Utilities site.

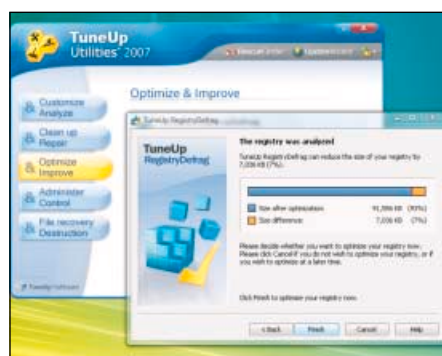
If you're more interested in practical features, then try the Disk Cleaner to remove redundant files from your hard disk, or perhaps wipe away invalid Registry entries with the Registry Cleaner. Another tool will defragment the Registry to improve performance, while the System Optimizer applies a range of tricks to speed up your desktop, hard disks, internet connection and browser.

Occasionally it looks like the Tune Up Utilities are simply reproducing existing Windows utilities, but look more closely and you'll find these versions have their advantages. For example, the Tune Up Registry Editor comes with a better Find tool than Regedit, allowing you to restrict your search to a specific area of the Registry. This alone could justify installing the program.

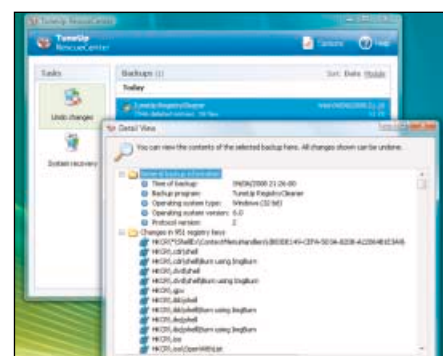
Three reasons you need Tune Up Utilities 2007



1 This program delivers easy access to all kinds of obscure Registry settings. Would you know how to tweak the cache that holds the configuration of all your Explorer folders, for instance? Or how to enable administrative shares or change the colour used to display encrypted NTFS files? Tune Up Utilities 2007 makes these tasks easy.



2 If you prefer larger applications, Tune Up Utilities 2007 has those, too. The Registry Defrag tool corrects and compacts your Registry, for instance. Disk Cleaner frees up hard disk space by removing redundant files, and there are utilities to undelete or securely erase files, fix hard disk errors and customise the look of your desktop.



3 You might be wary of letting any program make drastic changes to your PC, for example deleting thousands of Registry entries. But there's no need to worry here. Click the Rescue Center button and you'll discover backups of everything the Tune Up Utilities 2007 has changed, so it's easy to restore your original settings, if necessary.

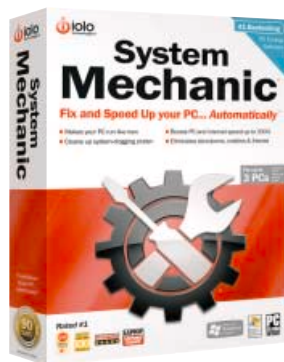
UPGRADE OFFER

NEW FEATURES

Speedy disk defragmentation
Improve Windows boot times
Free up disk space
Improved one-click maintenance
Tune Up Repair Wizard
Clear and intuitive interface

TUNE UP UTILITIES 2008

Move to the latest version of the Tune Up Utilities and you'll gain a new hard disk defragmenter that intelligently reorganises your files for the best possible performance. A Tune Up Repair Wizard can fix many common PC problems in a few clicks (missing icons, broken files, malfunctioning services and more). The One-Click maintenance tool now fixes even more problems with a single click, and a revamped interface means the program is now even easier to use. Tune Up Utilities 2008 normally costs £29.99, but as a registered owner of the 2007, version you need only pay £17.99. Point your browser at www.tuneup-software.co.uk/products/tuneup-utilities/news to find out more.



INFORMATION

System requirements Windows 2000/XP/Vista, 30MB disk space, Internet Explorer 6 or later
Contact www.iolo.com

Registration Get your free serial number and user ID by following the registration procedure at www.iolo.com/casm8.

Need to know This version of System Mechanic will expire six months after the installation date.

System Mechanic 8

Optimise and repair your PC with this system maintenance suite

Trying to keep your PC in peak condition can seem like a hopeless task. No matter how long you spend removing clutter or malware and optimising settings, problems begin to reappear again just as soon as you go online or install a new program. Depressing, isn't it?

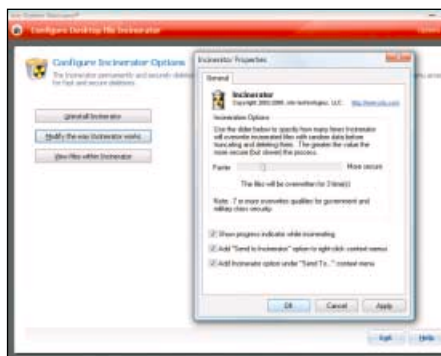
There is a way to lift the gloom, though, and it's called System Mechanic 8. Let this comprehensive tool scan your PC to check for, report on and fix any current problems, then maintain the system afterwards to ensure it's always in the best possible condition.

This may sound something like other utilities you've tried, but the strength of System Mechanic comes in the sheer range of issues it is able to detect and tackle. It checks for hard disk corruption, leftover temporary files and redundant

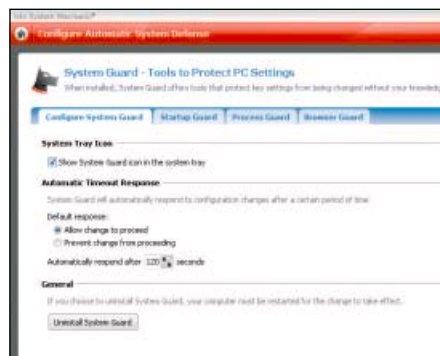
Registry entries. The program inspects your memory use, internet configuration and other settings to see if they're optimised for best performance. There's even an industry-strength anti-spyware engine to quickly detect and remove any malware that might have infected your PC.

In all the modules, there's a welcome focus on ease of use. For example, rival products usually include some kind of startup program manager that displays applications configured to launch when Windows boots, then lets you decide which should be removed. System Mechanic goes one better by inspecting the list itself, telling you which are unnecessary and removing them in a single click. That's much easier, although of course you can also take control and remove individual programs manually if you prefer.

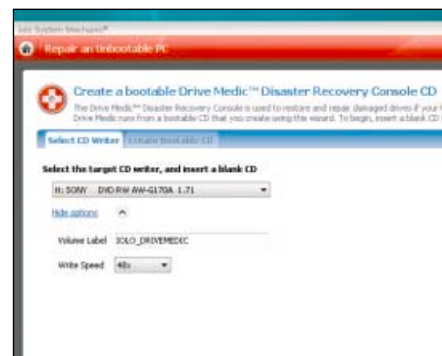
Extend System Mechanic 8 with these powerful hidden features



1 System Mechanic comes with many useful features that aren't enabled by default, so it's well worth exploring the menus. Go to Tools > Individual Tools > Enhance Personal Privacy > Configure Desktop File Incinerator, and you can install a tool that will help you securely delete unwanted, but confidential, files so they can't be undeleted later.



2 The program also comes with real-time anti-malware protection that will protect your startup settings, browser options and more. This isn't turned on when you first install System Mechanic, but it's easy to enable for yourself. Just go to Tools > Individual Tools > Enhance Protection and turn on the Automatic System Defence.



3 System Mechanic can even create a bootable CD containing disaster recovery tools, which is invaluable if your PC gets trashed and Windows won't load any more. But you need to burn it now, so you're ready for the worse. Click Tools > Individual Tools > Repair Problems > Repair an Unbootable PC and follow the wizard to create your recovery disc.

STOP PRESS

We apologise that the System Mechanic 8 software is not physically included on your cover disc, but this brand new version wasn't available in time to meet our disc production deadline.

Follow the registration instructions above to download System Mechanic 8 from the web.

EXTEND YOUR SUBSCRIPTION

Install System Mechanic and it will keep your PC healthy for six months. If you've enjoyed the capabilities of the program and you want to continue to use it after that, you'll need to extend your subscription. Fortunately for PCW readers, it's very reasonably priced at around £14 for another year.

Visit the System Mechanic product page (www.iolo.com) and click 'Extend my subscription', enter your serial code and then, through checkout, click 'Redeem coupon' and enter coupon code PCW78 to get 33 per cent off your subscription.



Serif Webplus 8

Build professional websites in minutes with this development tool

Creating your own website can be a challenging experience, especially when you're just getting started. It's too easy to spend ages staring at a blank page, waiting for inspiration, but if it never quite turns up, then you might want to look for some assistance.

Serif Webplus 8 is a flexible web page editor that can help kickstart the design process in a variety of ways. Launch its Web Wizard, for example, and you can choose from one of 50 stylish multi-page templates: pick one, modify the text and images to suit your needs and you could have the site finished within minutes.

If the templates don't suit your needs, they can easily be changed. If you're not keen on the colours, choose the Schemes tab and you'll find over 60 carefully co-ordinated colour schemes.

Just click one and every page on your site will be modified accordingly. It's quick, easy and useful if you've no eye for colour yourself.

If you want a different text size, select it and choose what you need. For a new background colour, drag and drop it. If you'd prefer a gradient fill there are four different types (linear, ellipse, conical and bitmap), hundreds of examples and, again, you can just drag and drop the fill you want onto the page.

If you have some web design experience, you can abandon the templates and create a new design from scratch. There are plenty of backgrounds, logos and clipart to help you along the way, along with an excellent table editor, powerful freehand drawing tools and a spectacular range of text and image effects.

INFORMATION

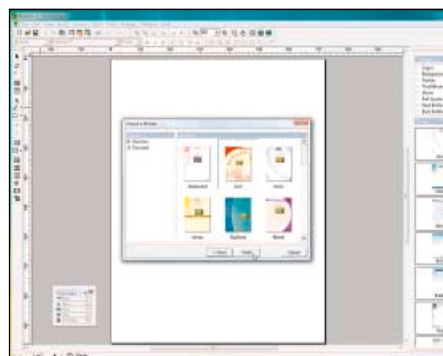
System requirements Windows 98/ME/2000/XP, 60MB disk space

Contact www.serif.com

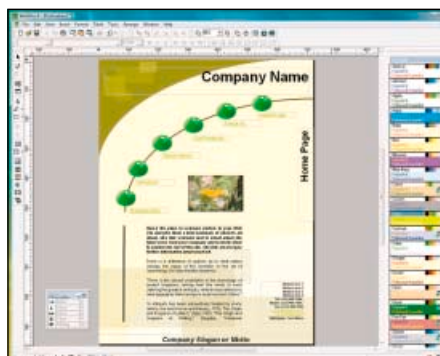
Registration Click Help > Registration Wizard and follow the instructions

Need to know To work with Vista, you must run as an administrator and download the winhelp engine from <http://support.microsoft.com/kb/917607>

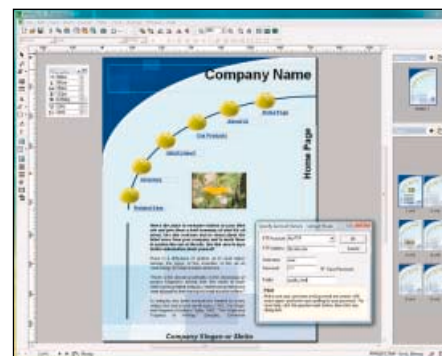
Creating your first site with Webplus 8



1 Launch Webplus 8 and the Startup Wizard will lead you through your first options. (If you've turned the Wizard off, Click File > New) Click Use a Web Wizard, then scroll through the list of templates, choose one you like and click Finish. Don't worry if the design isn't exactly right, you can easily change it in a moment.



2 Use the Wizard tab on the right-hand side to enter personal details, page titles and so on, and Webplus will update your pages automatically. Then click the Schemes tab to see the list of colour schemes available. Click a few to see if you can improve on the current look, and Webplus will preview the results on the current page.



3 Complete the process by changing the content on your site. Double-click in any text box to enter text of your own, right-click an image and select Replace Image to add a picture of your own, then click the Pages tab and repeat the process on each of your other pages. Finally click File > Publish Site to put your pages online.

READER OFFER

FEATURES

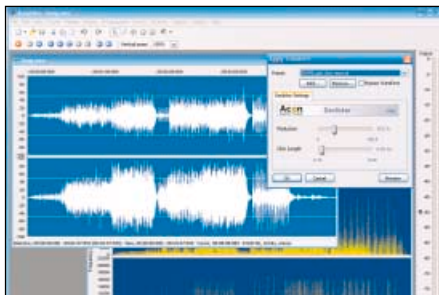
Organise, browse and search photos, movies and music
Create slideshows, photo albums and more

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Albumplus X2 is an ideal tool for organising, browsing, searching for and locating your favourite digital photos, movies and music. You can then get creative by designing compelling slideshows, stylish photo albums, calendars or posters, and sharing the results with family and friends. The list price is £39.99, but order before 26 July 2008 and you need pay only £29.99. Just call 0800 376 7070 (00 44 115 914 5454 outside the UK), quoting code RO/PCW/APX2/0608 to qualify for this special deal.



Acoustica 3.3



Acoustica 3 is a useful audio editor that's just packed with great features. At its simplest, you could use it to convert between audio formats (MP3, OGG, WMA and other popular file types are supported). Acoustica can also import audio from AVI, MPEG and WMV video files, making this an easy way to extract and edit soundtracks.

You can rip tracks from CD, and the program is particularly handy when it comes to converting old vinyl albums into digital form. The integrated Cleaning Wizard allows you to set the sample quality, choose an input level and start recording. LP-length samples may be automatically split into their separate tracks, ready to burn to CD. And if you find the analogue sound quality isn't up to

INFORMATION

System requirements Windows 98/ME/2000/XP, 7MB disk space, Windows Media Player 10 or later

Contact www.acondigital.com

Registration Launch the program and follow the on-screen instructions

Need to know Will not run under Windows Vista

Acoustica is packed with sophisticated tools for analysing and manipulating your audio files

scratch, so to speak, there are a range of special filters that you can apply to reduce noise, remove clicks and more.

Basic editing is simple, working in much the same way as just about every audio editor ever written. Just click and drag with the mouse to select a region, then apply an effect to that area. If you're an audio editing newbie, then you might restrict yourself to playing around with the volume or just clipping the beginning or end of tracks, but more experienced users can have hours of fun with special effects like the dynamic processor and the harmonizer.

It's an impressive collection of features that really manages to deliver something for everyone.

UPGRADE OFFER ACOUSTICA 4.1

The latest version of Acoustica includes more audio-processing tools capable of removing crackles or cleaning clipped recordings. There are several new integrated tools and effects, while support for VST plug-ins means it's easy to add more. And it's fully compatible with Windows Vista. Or you could try Acoustica Premium, which adds 5.1-and 7.1-channel support, professional-quality time stretching and pitch shifting tools, and more. Prices range from £15.90 for the standard version to £49.90 for the Premium, and you can place your order at www.acondigital.com/uk_upgrade_PCW.html.

350 Pages



If you've ever tried an online website creator before, chances are you're not keen to repeat the experience: most are slow and lacking in features. But 350 Pages is different, and it doesn't take long to see why.

This service comes with genuinely impressive templates and there's a wide range of layout options, so your site isn't going to look exactly the same as everyone else's. But don't take our word for it, browse the gallery of example 350 Pages customer sites for yourself at www.350.com/site/examples.htm.

The editor is easier to use than many conventional packages. You get to see the page you're editing within the browser, just as normal, then hover the mouse cursor over the area

INFORMATION

System requirements Web browser

Contact www.350.com

Registration Follow the web links

Need to know Sign up for a free account at www.350.com, then go to the My Account page and enter the upgrade code CD800VNL.

Attractive templates and good layout control mean it's easy to produce a very professional site

you'd like to change. A floating context-sensitive toolbar then appears with various options, perhaps to delete a text block, add a new one, or change text alignment. Click Edit and you can tweak your text, add links or view the raw HTML code. Try editing an image and you'll be able to resize, crop or rotate it, as well as automatically fix colour or brightness problems.

When you're done, 350 Pages will host your site for you as a subdomain (www.yourname.350.com), although you can also use your own domain name if you like. You're able to create multiple sites, perhaps one for each member of the family, and the storage limits are generous: you get 50MB for each site, and a 5GB monthly bandwidth allowance.

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Move to the 350 Pages Standard account and you'll get more storage space (up to 250MB) and a generous 10GB monthly bandwidth allowance. You'll have access to more clipart, including animations, and can enhance your site with forms, photo galleries, slideshows and ecommerce features.

Normally you'd expect to pay £34.49 for 350 Pages Standard, but as a PCW reader, you'll only be charged the bargain price of £17.25. Sign up for a free account at www.350.com, follow the My Account link and enter offer code CD800VNS in order to qualify for this very special deal.

COMPETITION

WIN! A Dell XPS M1530 with Webroot software

This month, PCW has teamed up with Webroot to offer one lucky reader a Dell XPS M1530 notebook protected by Webroot's full range of security software. We're also giving away 25 one-year subscriptions to Webroot's 2GB secure online backup, worth £15 a piece, for runners-up.

Our main prize, the Dell XPS M1530, has a 15.4in widescreen display, 1.83GHz Core 2 Duo T5550 processor, Nvidia Geforce 8400M GS 128MB graphics card, 2GB of DDR2 Ram, a 160GB hard drive, DVD rewriter and Windows Vista installed. It comes with a full set of Webroot's security products worth £100, so you can keep your information private and stay safe from viruses, trojans, keyloggers and other malware on the web.

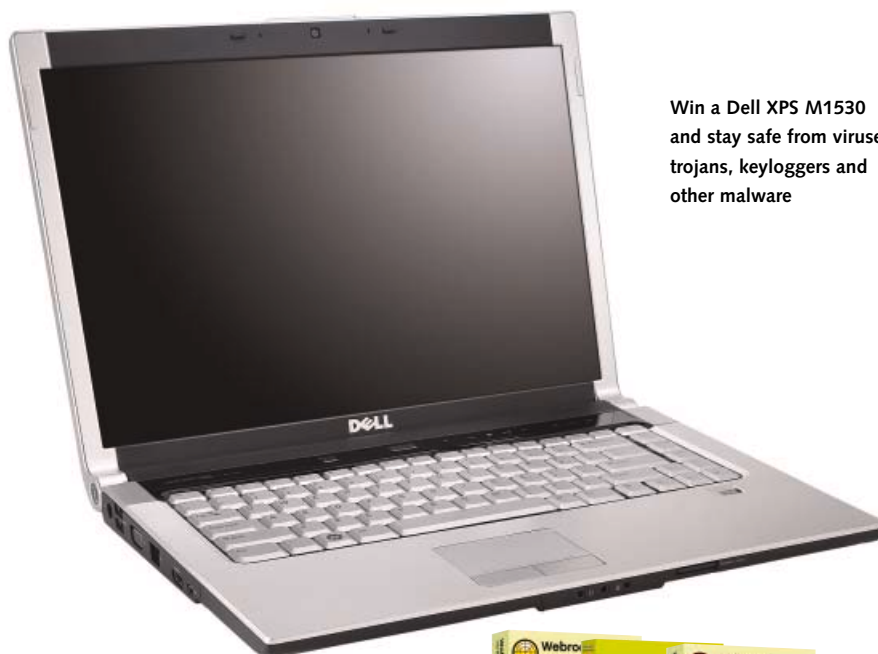
Webroot Anti-virus with Anti-spyware and Desktop Firewall helps protect you against identity and data theft, hackers and other types of unauthorised access to your PC. It's worth £30 and can protect three PCs at once.

Webroot Window Washer permanently removes sensitive information about your online and offline activity, including which websites you visit, which files you download and open, and stored user names, passwords and card numbers. It's worth £25 and can be used on three PCs.

Webroot Parental Controls let you protect your children from computer risks on three PCs, even when you cannot personally monitor your child's activity, for just £25. The software is tamperproof and blocks access to inappropriate or dangerous web content. It also enforces rules for how much computer time is acceptable and which programs can be used.

The Dell laptop winner and 25 runners-up will receive a one-year subscription to Webroot's Secure Backup service with 2GB of storage, worth £15 each.

Webroot Secure Backup gives automatic online and local protection for your digital photos and other irreplaceable files. Unlike other online services, Webroot keeps unlimited file revisions, so if you change a file and back it up, every previous version of the file is still backed



Win a Dell XPS M1530 and stay safe from viruses, trojans, keyloggers and other malware



up – and without chewing away at your 2GB allowance. Data is encrypted on your home PC and re-encrypted on Webroot's server too.

Learn more about Webroot's product range at www.webroot.co.uk.

For a chance to win the Dell laptop or a copy of Webroot's secure backup service, answer the question below and enter online at www.pcw.co.uk/competitions. The competition opens on 10 July 2008 and closes on 9 August 2008.

How many versions of one file does Webroot's Secure Backup service maintain?

- a) 1
- b) 12
- c) unlimited file revisions

This competition is open to readers of PCW, except for employees (and their families) of Incisive Media, and Webroot. PCW is the sole judge of the competition and the Editor's choice is final. Offer applies to residents of the UK and the Irish Republic only. Entrants must be over the age of 18 and only one entry per household will be accepted. Winners will be selected at random from all correct entries received. No cash alternative is available in lieu of prizes. Incisive Media will use all reasonable endeavours to notify the winner(s) within 14 days of the close of the competition. Incisive Media reserves the right to substitute the prize for one of greater or equal value if circumstances make this unavoidable. Prizes will be dispatched by the competition sponsor(s) and the winner(s) name(s) and address(es) will be provided to the competition sponsor(s) for this purpose. No purchase of the magazine is necessary to enter the competition. Incisive Media will use all reasonable efforts to ensure that the prizes are as described on this page. However, Incisive Media cannot accept any liability in respect of any prize, and any queries regarding a prize should be taken up directly with the sponsor of that prize.

The winners of the June competition are Phil Jones of Cornwall, Stephen Carr of Glasgow and Lestyn Davies of Wrexham, who each win a 30GB Archos 605 Wifi Personal Media Player and 80GB TV+.

ENTER ONLINE AT www.pcw.co.uk/competitions

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You may recognise some entries in this blog from our Letters pages, but they are published here first, letting you add your views and comments.

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10 tips for buying safely

- 1 Get written quotes from shops specifying components used, or print off and keep spec sheets from websites.
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- 3 Keep good records, storing receipts, correspondence in one place.
- 4 In England and Wales, the onus is on retailers to prove that faults found within six months on purchases are not inherent.
- 5 Goods ordered online, by phone or post can be returned under the Distance Selling Regulations without explanation within a reasonable time - this is widely accepted as being seven days.
- 6 Open and inspect all goods as soon as possible after delivery and make sure they work.
- 7 Companies are not obliged to repair or replace goods damaged by accident or misuse, unless it is caused in transit by a delivery service.
- 8 Companies cannot charge for a service that isn't being delivered, but never stop a direct debit while under contract.
- 9 Consumers should not suffer financial loss for repairs that are not their fault, so claim back carriage charges.
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If you don't want to make the move to Vista but prefer to wait and see what Windows 7 will bring, this feature is for you. We'll show you how to keep your XP PC in tip-top condition for the next couple of years.

PC power supplies

With electricity prices forecast to shoot through the roof, it makes sense to ensure your PC isn't gobbling unnecessary power. Our feature demystifies power supplies and shows how upgrading to the latest technology is an easy way to save money.



**There's lots more in October's PCW
DON'T MISS IT...**

SEPTEMBER 2003

The battle between console manufacturers and modders escalated in 2003. Clive Akass took an in-depth look at the experiences of Bunnie Huang, the first person to crack Microsoft's original Xbox. Huang argued that having paid to own the Xbox, he could do with it as he pleased. Giving him praise, Clive said: "His account of how he cracked the Xbox is fascinating and his perseverance is awesome. At one point he even dunked the Xbox chips into fuming acid in a bid to read the logic from the bare silicon."



Our lead news story was about the death of the Internet Explorer browser in its current form. At a developer conference, a Microsoft executive told PCW's Tim Anderson: "Microsoft thinks of the browsing capability as being built into all our applications and products, not just the operating system." The integration of Internet Explorer into Windows (where the HTML renderer is an integral part of the operating system) had already been criticised by the US Department of Justice for monopolistic practices and we predicted Microsoft's plans for Vista could backfire. Vista, ultimately, didn't see significant further IE integration.

SEPTEMBER 1983

Forget cover discs – in September 1983 PCW gave away a wall chart of Basic code words for 13 popular micros. "One day, all computers will understand the same language," we wrote, and the chart was designed to "tide you through until this great day arrives".

World processing was emerging as a killer application. Not only did we list a word processing program in our do-it-yourself pages, but we also reviewed Tasword Two for the Spectrum: "If your main reason for buying a micro is to use it for word processing, then the Spectrum would be one of your last choices." Fair comment, but we quite liked the software nonetheless.

Finally, a rather telling story of how much cash various manufacturers were spending on advertising shows how times have changed. Commenting on Apple's relatively modest advertising budget, Sol Libes said it: "...may account for why it is lagging behind IBM in the image department". Funny to think these days Apple is probably the most image-conscious manufacturer around.



SEPTEMBER 1993

In 1993, the CD was busy carving itself a place in the world of computing, and in the September issue we looked at two CD-related technologies from Kodak and Philips. Kodak announced the Photo CD back in 1990, but the product didn't emerge until 1992. It comprised a CD player that plugged into your TV so you could look through up to 100 images from the comfort of your sofa, but users were slow to catch on to the concept.

Philips helped develop the Photo CD, but decided to use the technology to create a multimedia version, the CD-i.

Meanwhile, as RSI (repetitive strain injury) entered the dictionary, we looked at two ergonomic keyboards – a relative novelty back then. The £125 KBC 5500 Ergonomic got a thumbs-up from our reviewer, who liked the split keypad with both halves set at an angle to help turn the typist's wrist inward. The £195 Adjustable Keyboard from Apple also went down well: its split-body design meant you could set the two halves of the keyboard to the most comfortable position.



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